

# The Iron Age

A CHILTON PUBLICATION

NATIONAL METALWORKING WEEKLY

JUNE 12, 1952

CONTENTS PAGE 2

UNIV. OF MICHIGAN

JUN 13 1952

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"swords and plowshares"



JIG borers and jets, trucks and tanks, household appliances and electronic instruments, all use New Departure ball bearings of the same materials, same heat treatment, same methods of precision manufacture.

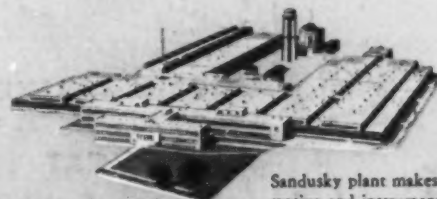
Thus conversion from one to the other in New Departure's three great plants is largely a matter of changing the emphasis on types and sizes.

The capacity of the world's largest ball bearing plants is your assurance of the best possible production schedules.



*Nothing Rolls Like a Ball...*

**NEW DEPARTURE  
BALL BEARINGS**



Sandusky plant makes both automotive and instrument bearings.

NEW DEPARTURE • DIVISION OF GENERAL MOTORS CORPORATION • BRISTOL, CONNECTICUT

165FC

# Farval contributes to good coal preparation at Weirton Washery

**W**ITHOUT adequate lubrication, bearings soon clog with dust and grime. They wear badly and grow friction-bound, so that equipment operates inefficiently. Bearings heat up and burn out, forcing shutdowns for replacement at great expense of material, labor and lost production.

The Weirton Steel Company insures adequate lubrication of the equipment in its Morgantown, West Virginia, coal preparation plant with Farval Centralized Lubrication. Seven Farval systems—five manual and two automatic—lubricate a total of 242 bearings on conveyors, rotary dumper, elevators, feeders, classifiers, crushers, washers and other machinery. Frequent, regular lubrication at this plant is a matter merely of setting time clock controls and pulling the levers of hand pumps.

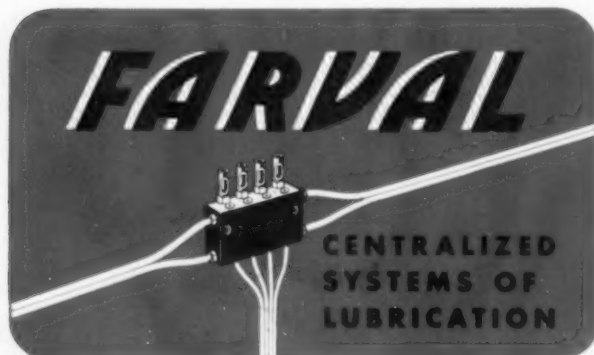
More and more, coal companies are protecting expensive equipment above and below ground with Farval Centralized Lubrication. This simple system, comprising measuring valve manifolds, dual lubricant lines and central pumping station, is easy to install on any equipment, with minimum interruption to operation. Farval soon pays for itself in a new plant or on older machines long in service.

Proved by 25 years of performance throughout industry, Farval is ready to help you. Find out how you can save oiling labor, lubricant and production time and reduce bearing expense.

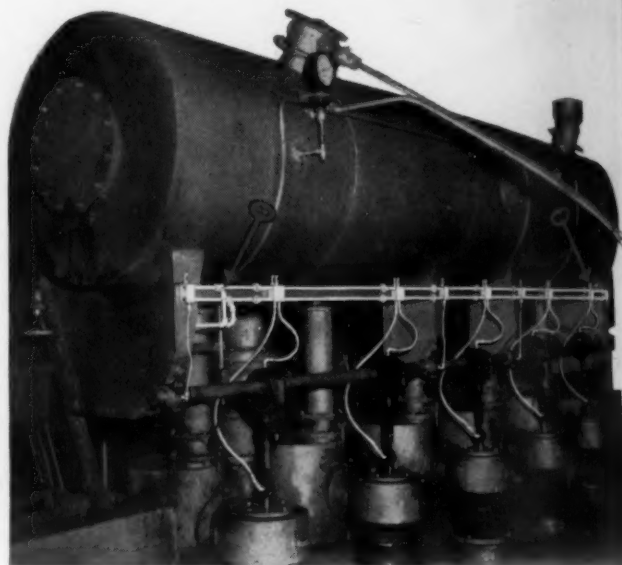
In your area there's a Farval engineer, ready to discuss your lubrication problems and suggest proper systems to meet your particular requirements.

The Farval Corporation, 3252 East 80th Street, Cleveland 4, Ohio.

*Affiliate of The Cleveland Worm and Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Ltd.*



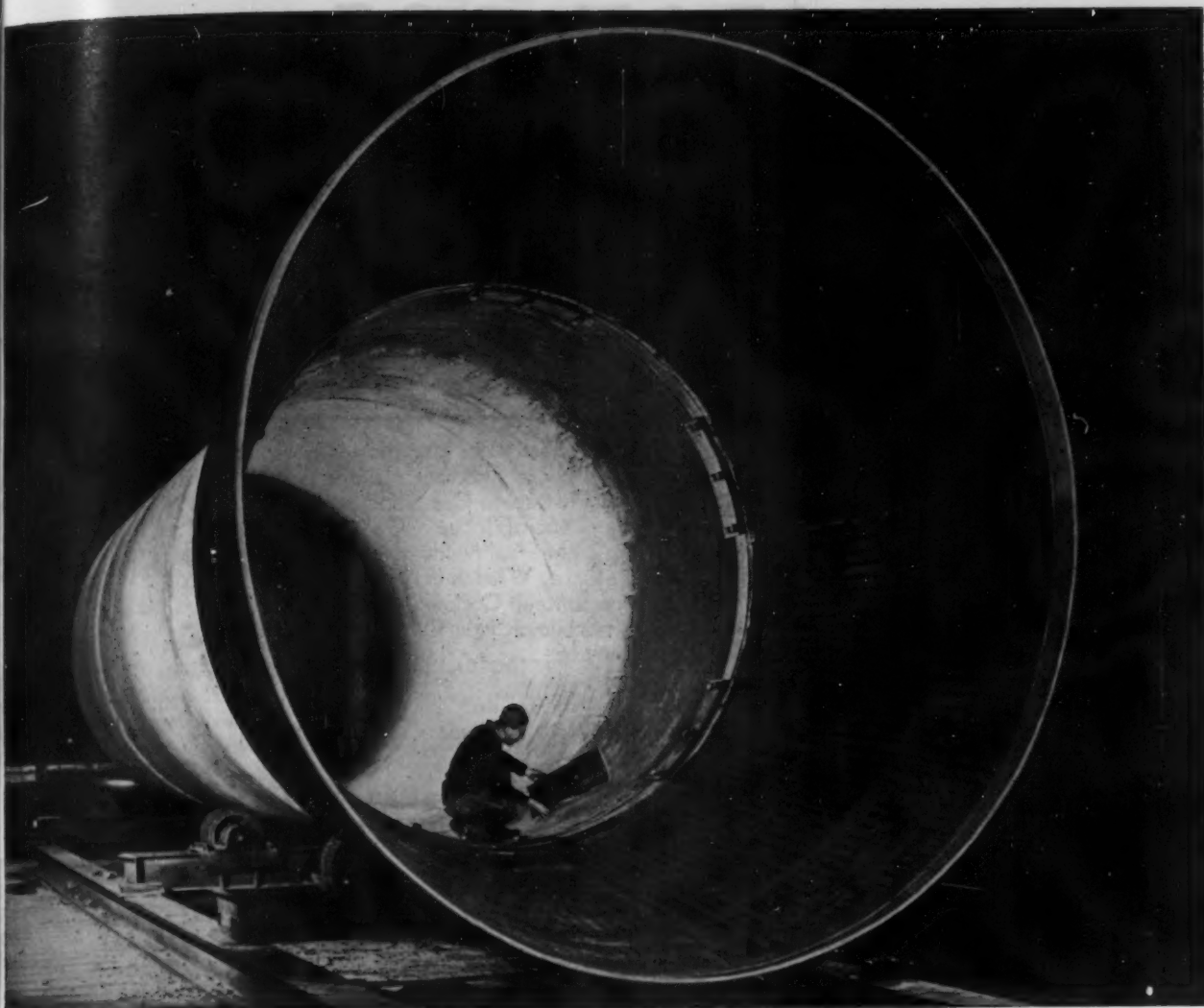
**FARVAL—Studies in  
Centralized Lubrication  
No. 137**



This photograph shows clearly the Farval dual lubricant lines and valve manifolds which lubricate the air pulsation valves of the wash boxes at the Weirton Washery.

**KEYS TO ADEQUATE LUBRICATION**—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine will be properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.





## Kiln Section Made by Welding

This is a repair section for a rotary kiln. It consists of these three elements: (1) a cone, 9 ft, 6 in. long, formed from 1½-in. steel plate; (2) a riding ring, 6 ft long, formed from 2½-in. plate, and (3) three shells, 21 ft, 6 in. long, formed from ¾-in. plate. The maximum diameter of the cone is 15 ft. The diameter of the riding ring and shells is 11 ft, 6 in. The complete assembly, weighing 76,467 lb, was produced by welding.

Kiln sections may be far removed from the type of equipment used in your business. But whatever

the type of machinery you build, you'll find it worth while to look into the advantages of Bethlehem Weldments.

With Bethlehem Weldments, excess weight is eliminated, without any sacrifice of rigidity. This weight-reduction also represents a saving in the cost of the finished machine.

Bethlehem Weldments are extremely versatile, too. They can be produced as simple parts or intricate assemblies, and in practically any size. They permit freedom of design, for the steel from which they are made can be bent, pressed

or shaped prior to welding, without damage to the physical structure of the steel. What's more, Bethlehem Weldments can be used either alone, or combined with forgings or castings.

If you would like to discuss the possibility of using Bethlehem Weldments, contact the nearest Bethlehem office and we will arrange for a representative to call.

**BETHLEHEM STEEL COMPANY**  
BETHLEHEM, PA.

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# IRON AGE

JUNE 12, 1952  
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# DIGEST

## of the week in metalworking

### STEEL STRIKE TALKS FALL FLAT ON FACE

PAGE 71 Steel strike negotiations in Washington last Monday crashed into a stalemate over the union shop issue. Fond hopes of many that steel production would be resumed this week were shattered by union stubbornness on the union shop. The way had been oiled on wage matters, perhaps prices.

### WILL THERE BE LESS NICKEL FOR AUTOS?

PAGE 73 Keeping brightwork bright will be an increasingly hard job for automakers. This was plain at last week's Atlantic City meeting of automotive engineers. Further nickel cuts are in prospect because of planned increases in jet planes. Ingenious conservation is now common in Detroit's auto plants.

### STRIKE SLUGS SLIPPING SCRAP MARKET

PAGE 75 Shutdown of the steel industry for the third time this year gave the scrap industry pause to try to puzzle out what had been happening and what could happen to its market. How long certain openhearth scrap could stay at OPS ceiling prices was one of the questions. Stockpiles are high.

### SALES OF LIGHT STEEL HOMES ARE RISING

PAGE 76 Steel buildings are no longer restricted to industrial use. Despite a first quarter sales drop, the structures are gaining acceptance in other fields. Farm, government use is growing. And housing remains the biggest potential. But marketing problems must be licked by fabricators.

### GEAR NEW ORDER INDEX STRIPS A FEW TEETH

PAGE 77 Shipments are continuing at a record pace, but new orders are in a steep decline, gear makers reported at the American Gear Manufacturers' Assn. annual meeting last week at Hot Springs, Va. Slump seen caused by defense slowdowns, soft appliance markets. But no one seemed worried.

### HOT COPPER PENNY GLOWS BURNING RED

PAGE 78 The government's hot copper penny was getting too hot for handling. Last week the Washington planners tried to find the answers on how to keep copper supplies moving. "No conclusions" said the government after meeting with industry people who said world copper prices needed a subsidy.

### NPA TO FERRET OUT IDLE MACHINE TOOLS

PAGE 101 NPA is convinced that there are many idle machine tools which could be pitched into the production battle. The agency has asked tool builders to supply teams of experts to scour the country for unused government-owned machine tools. Schools have been keeping tools in cold storage.

### CANADA TRADE SHOW FEATURES MACHINERY

PAGE 102 With material and goods of all types on exhibit in Toronto last week, machinery and machine tools held the spotlight at the Canadian International Trade Fair. Canada had the largest exhibits, with German toolbuilders next. U. S. exhibits were minor because of government limits on sales.

### DIPPING IN ALUMINUM COATS STEEL PARTS

PAGE 115 General Motors has developed a dipping process which puts a sound aluminum coating on fabricated steel parts of complex shape. Purpose is to give heat and corrosion resistance to the parts. It is in commercial use on steel parts which formerly were made of Inconel to stand up.

### FORGE SHOP PUTS IN STEEL MELTING PLANT

PAGE 119 A forge company gets better steel quality and control of production with its own melt shop. Two electric furnaces give annual capacity of 60,000 tons. All materials except scrap are packaged, palletized, or shipped into the plant in containers. Equipment includes an oxygen plant.

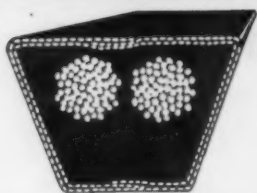
### CARBIDE CUTTER TRUES RAILROAD WHEELS

PAGE 132 A new truing machine cuts costs way down in locomotive maintenance. Heart of the machine is a pair of special solid body cutters. Each has 10 inserted blades carrying 11 round carbide inserts. Four pairs of 500 Bhn wheels can be turned with one set of inserts, in only 19 min per pair.

### MAP THE DEVELOPMENT OF TITANIUM ALLOY

NEXT WEEK Phase diagrams are road maps in developing proper heat treatment, identifying structure of heat treated alloy, and predicting properties of a given alloy system. Binary phase systems are classified in four main groups: Ti-Mo, Ti-Al, and two others with different beta characteristics.





**B. F. GOODRICH  
GROMMET V BELT**



## **B.F. Goodrich grommet belts saved \$250.00 a year**

*B. F. Goodrich grommet V belts cut costs 20 to 50%*

**T**HESE belts have to run 24 hours a day under terrific tension. Ordinary V belts used to snap in two, fly off this drive in only 4 months. In September 1950, B. F. Goodrich grommet belts were installed. They have already lasted 4 times as long as previous belts, still look good, and are saving over \$250.00 a year in replacement costs. Here's why B. F. Goodrich grommet belts can be counted on to save on belt costs:

**No cord ends**—A grommet is endless, made by winding heavy cord on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur

in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

**Concentrated cord strength**—All of the cord material in a B. F. Goodrich grommet multiple-V belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. No layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced.

**Better grip, less slip**—Because a grommet is endless, a grommet V belt is more flexible, grips the pulleys better. Size for size, grommet multiple-V belts will give  $\frac{1}{3}$  more gripping

power, pull heavier loads with a higher safety factor.

**Only B. F. Goodrich has the grommet!**—No other multiple-V belt is a grommet V belt (U. S. Patent No. 2,233,294). Now available in C, D and E sections. See your local B. F. Goodrich distributor. *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.*

*Grommet V Belts* BY  
**B.F. Goodrich**  
RUBBER FOR INDUSTRY

## In Your Midst

**T**HERE is much to-do today about a serious shortage of executive personnel. Advertisements in metropolitan papers testify to this shortage.

Companies are vying with each other in the competitive market for top-notch material. Other firms are outbidding each other at various colleges for potential managerial timber.

Some companies lack runners-up for managerial positions. Others are dubious about those in their company who might be in line for advancement.

So the cry goes—shortage of executives or executive material. It comes from many present top men who have been unable to satisfy themselves as to proper candidates.

Many men in the ranks think there is no shortage if they had their chance. They decry the lack of opportunity for an executive job.

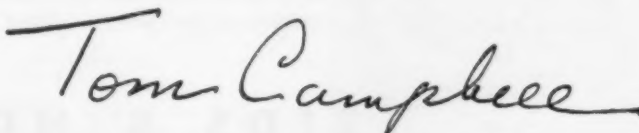
Some firms overdo training at the expense of the men. One large company had so many men on "stand-by" that most "died on the vine" as their bosses sought the greener fields for candidates.

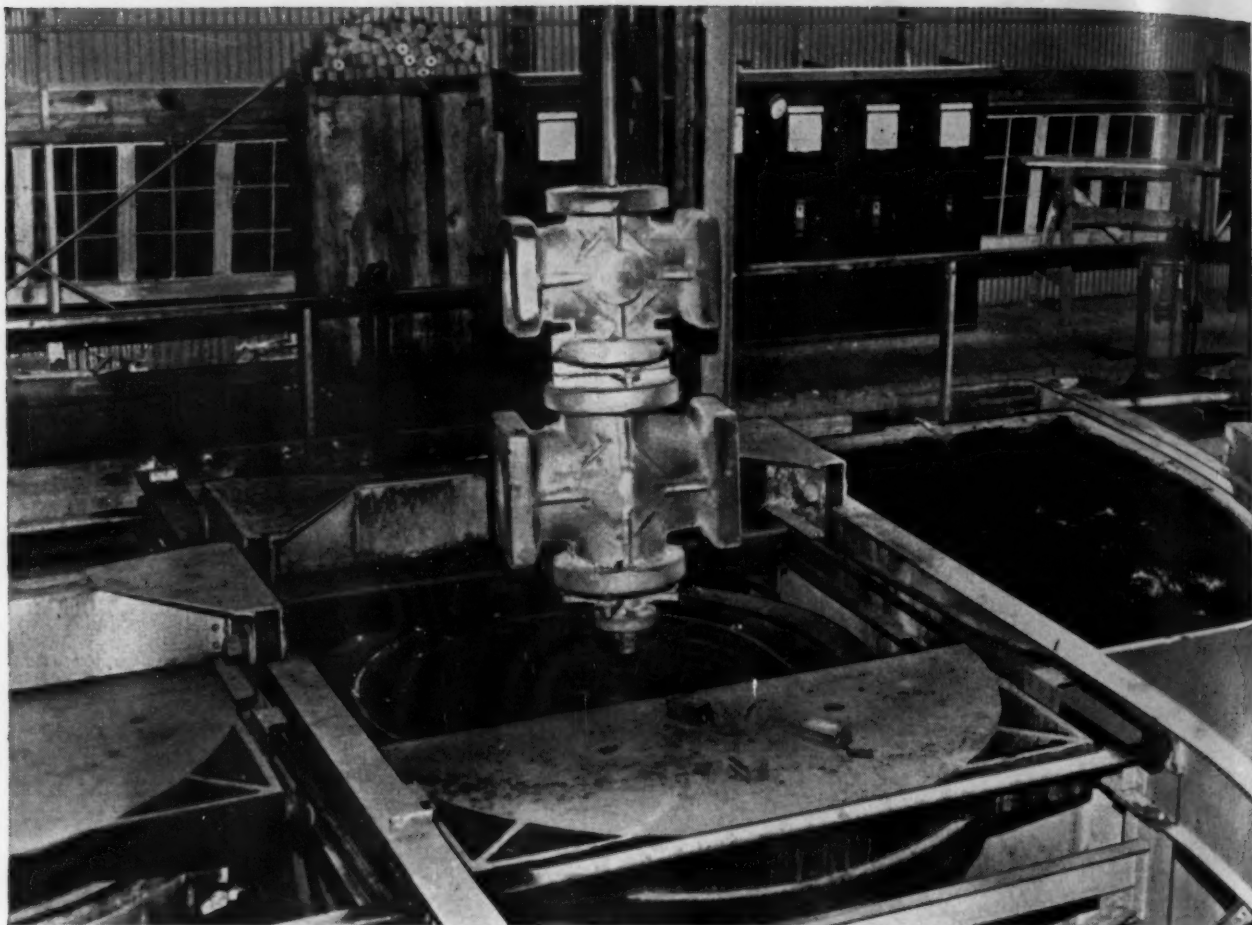
According to those who claim they can do the job, there seems to be something of a taboo placed on men in the company simply because they *are* in the company.

Potential executive candidates are not always sought within a company when a top job opens. Importations often are the rule. Yet, with all the tests and interviewing techniques, "trial and error" is still a sure way of finding the right man.

Management says there is a shortage. Men in the ranks say there is no shortage if they get a chance and proper training. Many companies agree with them; many do not.

If you lack executive candidates look in your own company—long and hard. Take a chance with one of your own men but do an honest and unprejudiced job of it. You will be amazed at what you find in your midst.

  
Editor



Part of heat-treating dept., Texas Electric Steel Casting Co., Houston. Valve body casting leaving furnace after slow cooling. All furnace temperatures are controlled by Micromax instruments in background.

## Round-the-clock Heat treatment?

### Tesco does it under Micromax control

Twenty years experience in the manufacture of heavy castings gives the Texas Electric Steel Casting Co. a vast store of information about all kinds of heat-treating equipment. And one fact this experience clearly shows is that they can rely on Micromax automatic control to back them up every time . . . even when they must hold temperature to a  $\pm 10$  F tolerance!

Tesco has found Micromax dependability especially valuable in 24-hour, 7-day-a-week operation. Its automatic standardizing protects the basic accuracy of the entire instrument, removing all need for everyday adjustment. Its micro-responsive control anticipates changes, regardless of cause, and heads off their effect, so as to hold heating, soaking and cooling temperatures as specified.

This smoother performance is available for all furnaces—car-bottom and vertical, such as Tesco's . . . continuous furnaces . . . controlled atmosphere installations; and for practically *any* product where uniformity and *economy* are important.

In solving such problems, you may select Micromax instruments, as Tesco did, or Speedomax electronic recording controllers. Both instruments are available in either the strip chart or round chart form. Both can provide any control action needed.

Our representative will be glad to help you investigate the instrumentation for proper control of your heat-treating problems. Write our nearest office or 4956 Stenton Ave., Phila. 44, Penna., for catalogs and information.

**LEEDS & NORTHRUP CO.**  
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Jrl Ad ND44-33-620(3)



# Dear Editor:

## Letters from readers

### Thank You

Sir:

May we take this opportunity to express our appreciation for the superb job you and your staff are doing on tool steels and carbides. Your "Directory of Tool Steels," your June, 1951 Tool Steel Chart, and Mar. 6, 1952 list of "New Tool Steels and Carbides" have gone a long way towards keeping us out of the usual snarls in trade names.

We are wondering if all this information is now compiled in a single booklet such as your original tool steel directory.

J. H. RUDY

RCA Victor Div.  
Radio Corp. of America  
Lancaster, Pa.

The 1952 edition of our Tool Steel Directory incorporates all these features.—Ed.

### Molding Interest

Sir:

We have taken great interest in the articles published by THE IRON AGE regarding the development of shell molding processes which appeared in recent issues.

We believe that the process, although in its infancy, shows great promise and for this reason we would like to explore its possibilities for our uses. It has been impossible for us to clip and retain the articles you have published regarding this subject, therefore, we would like to know if it is at all possible to obtain reprints.

We would also like to request the names and addresses of individuals or organizations that are pioneering this process, if available.

We wish to congratulate you for the excellent informational and technical articles that appear regularly in your publication.

W. H. BOGGS  
Product Engineer

Porter-Cable Machine Co.  
Syracuse, N. Y.

Names and companies as well as makers of machinery have appeared in our articles on shell molding over the past 2 years. A complete reference was published on p. 118 of our May 15 issue. The latest article on the subject also appeared in that issue.—Ed.

### Too Much HP

Sir:

A paragraph appearing on p. 95 of your Apr. 17 issue has aroused considerable discussion and dissension in our department.

The item referred to the failure of

a 500,000-hp electric motor and we are wondering whether or not this was a misprint. Our Milwaukee Westinghouse branch claims they have made the largest motor in the world which is rated at 65,000 hp.

Will you please help us out in this instance?

D. L. MacLEOD

Plant Engineering Dept.  
Nash Motors Div.  
Nash-Kelvinator Corp.  
Kenosha, Wis.

Sorry we had a typographical error. The electric motor should have been 5000 hp. Both General Electric and Westinghouse have built 65,000-hp units.—Ed.

### Who Makes It?

Sir:

Referring to p. 35 of your May 29 issue, who makes the new line of floating worm gear motors which permit direct application of power to roller conveyors of rolling mills?

W. W. McKAIG

Cumberland Steel Co.  
Cumberland, Md.

Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland 10, Ohio, are the makers of the floating worm gear motors for rolling mill conveyors.—Ed.

### Self-Lubricating Bushings

Sir:

We are interested in the item on the Newsfront page of your May 22 issue on self-lubricating metal powder bushings developed for roller chain applications.

Can you supply us with any additional information on the subject?

W. V. COVERT  
Chief Engineer

Diamond Chain Co., Inc.  
Indianapolis

Write to the Whitney Chain Co., Hartford, Conn., for further information.—Ed.

### Arcair Torch

Sir:

I noticed the article "Compressed Air, Carbon Arc Speed Metal Cutting" in your Feb. 14 issue dealing with the use of the Arcair torch.

Carbon arc flame cutting of stainless steel is a subject of great interest to us at the present time and, therefore, I would be grateful if you could send me any further information on this item.

R. SEWELL

United Steel Companies Ltd.  
Rotherham, England

For more details write to the National Supply Co., Grant Bldg., Pittsburgh, Pa.—Ed.

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Speed  
Assemblies  
Improve Your  
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Save Costs... Increase Profits  
with these Pheoll Fasteners

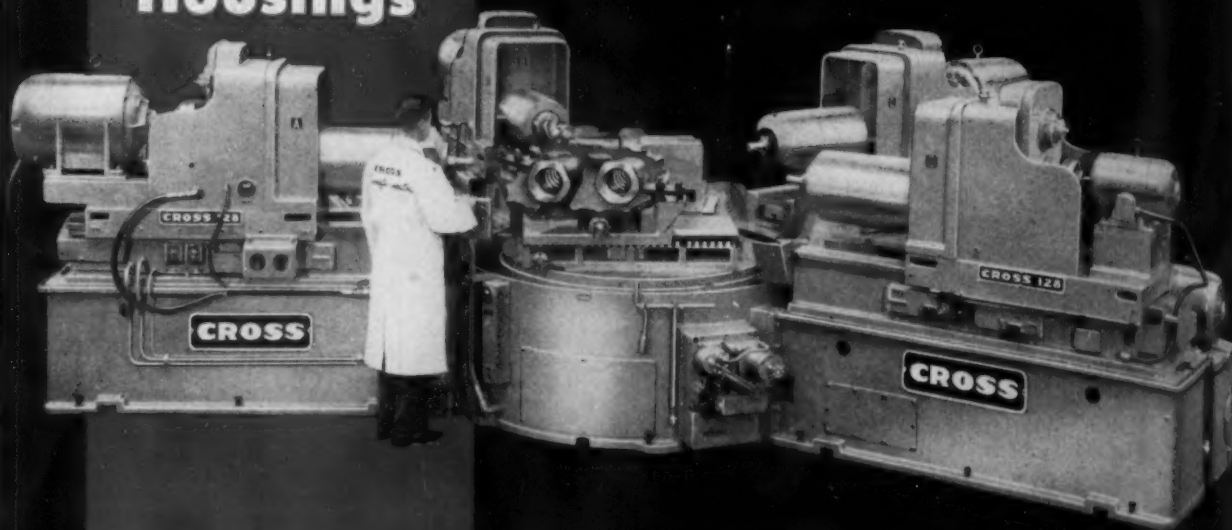
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†Furnished in slotted  
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**Bores  
Tank  
Suspension  
Support  
Housings**

*Another Special by Cross*



- ★ Rough and semi-finish bore multi-diameter hole and form two snap ring grooves; index fixture and repeat operation for second bore.
- ★ Material—Cast Armor. Hardness—Rock. C42.
- ★ Six pieces per hour (three right and three left hand) at 100% efficiency.
- ★ 40 horsepower drive motor for each boring spindle.
- ★ Five-station, fluid motor operated, index table, including one station for loading, three for boring and one for grooving.
- ★ J.I.C. standard hydraulic and electrical construction with stranded wire.
- ★ Other features: Hardened and ground ways; hydraulic feed and rapid traverse; pre-set tools; automatic, gravity operated, cam clamping for index table.

Established 1898

THE **CROSS** CO.  
DETROIT 7, MICHIGAN  
*Special* MACHINE TOOLS

# Fatigue Cracks

by Charles T. Post

## Vice-President

We have just come from a meeting of an organization that could well and providently prove to be the prototype for clubs all over the land. The name happens to be the Pacific Coast Displaced Persons, a sizable group of publishing and advertising people now working in the East, but with roots in the West.

There is no charter or by-laws. Hence, no officers—except vice-presidents. Every member is a vice-president. And every vice-president holds membership certificate No. 1. Because no one can appoint a program committee, there can be no speeches. There is no treasury or treasurer; thus, no dues. Meetings are held only twice a year, because everyone is tired of organizations whose frequent meetings represent duty rather than pleasure.

The vice-presidents fall all over themselves to provide anything the group needs. Take membership certificates. The art director of a big advertising agency volunteered to design them. Another ad man hopped up to say he would provide the printing plates. And a publisher agreed to print them on parchment. Last meeting, an airline man flew in California crab for the crowd. A winery man arranged for a couple of cases of champagne. So it goes.

When Governor Warren was in town, the P.C.D.P. made him an honorary vice-president. "You might be moving East soon," the boys told him.

## Apnonyms

This shaky old world is settling down and the right men are getting into the right jobs, if the current crop of apnonyms is any indication.

We learn that Gerald Steel is a vice-president of The Iron & Steel Institute, Great Britain. Don Heaton is director of public relations, Vapor Heating Corp., Chicago. And E. Setterblade is a design engineer for Westinghouse's aviation gas turbine division.

Charles C. Finn, whom we've vainly tried to interest in the fish

business (he represents a galvanizing firm), has netted a nice catch: Jack Frost, a meteorologist in Spokane; Henry Shakeshaft, who drove an outboard hydroplane to a new record; Dr. Herman V. Tartar, a chemistry professor at the University of Washington.

## Not So Good

The obverse of the apnronym coin bears less favorable omens. Mr. Finn notes, in the social columns, that a Miss Lowder has announced her engagement to a Mr. Widdows. "Do you feel, as I do, that Lowder-Widdows is not the apnronymic assurance of a happy life?" he asks. Then he notes that a young lady has applied for a marriage license to a gentleman named Parent.

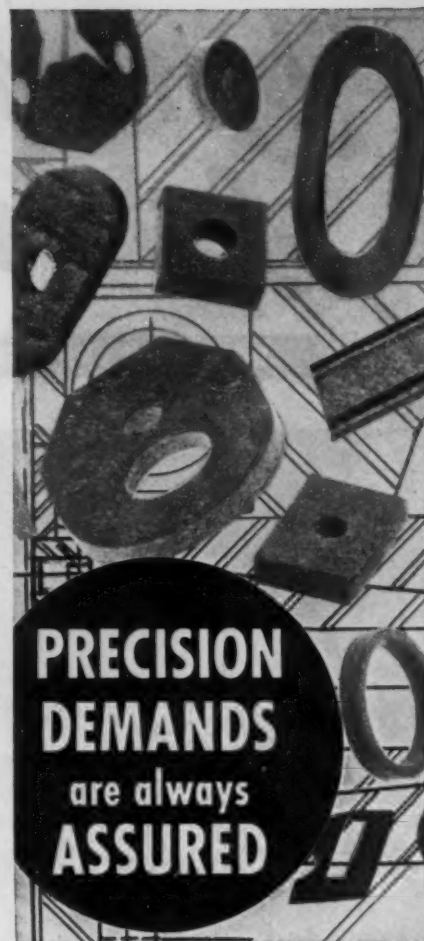
Whereupon, he presents a headline from a Seattle paper: "Motorist Found Guilty of Appeal." That, of course, is the way anyone feels when he tries to talk back to the cop.

## Puzzlers

The smash-up puzzler wasn't too difficult for J. Harrington, E. W. Bliss Co.; L. E. Cooper, American Steel Supplies and R. W. Huff, Canton, Ohio.

Maybe it's spring that has caused the great number of replies to the gardener puzzle. Here are the latest entrants in the contest: R. H. Lambert, Philadelphia Naval Shipyard; R. T. Combs, U. S. Steel Co.; N. H. Ross, Ole K. Olsen Co.; F. M. Peterson, Consolidated Vultee Aircraft Corp.; C. A. Petoskey, Ford Motor Co.; C. O. Talbergs, Winters & Crampton Corp.; M. Campione, Nash-Kelvinator Corp.; A. B. Brock, Jr., The Ohio Machine & Boiler Co.; J. W. Von Nieda, Ephrata Mfg. Co.

A. Anderson, Aluminum Company of Canada, poses this one. A homogenous bar weighing 40 lbs is divided into 4 parts in such a way that any weight from 1 to 40 lbs inclusive (fractions of pounds excepted) may be obtained by adding or subtracting the 4 pieces on a balance. What do the individual pieces weigh?

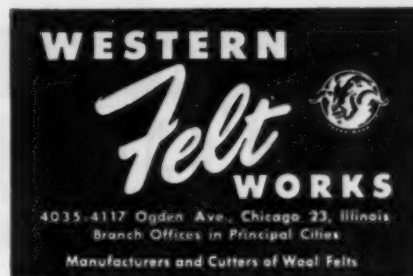


Technique of Western Felt production and processing has built an enviable reputation for engineering precision. Chemical specifications must be perfectly met—parts from wool softness to rock hardness are cut to close tolerances. As an extremely versatile material Western Felts are resilient, flexible, compressible. They resist oil, water, heat, age—do not ravel, fray or lose shape. New uses found daily. It pays to depend on Western Felt.

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- Instrument mounts

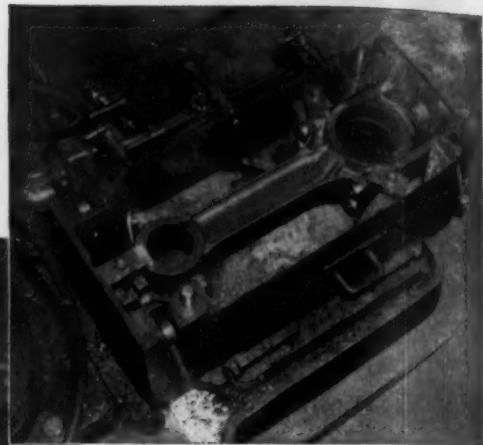
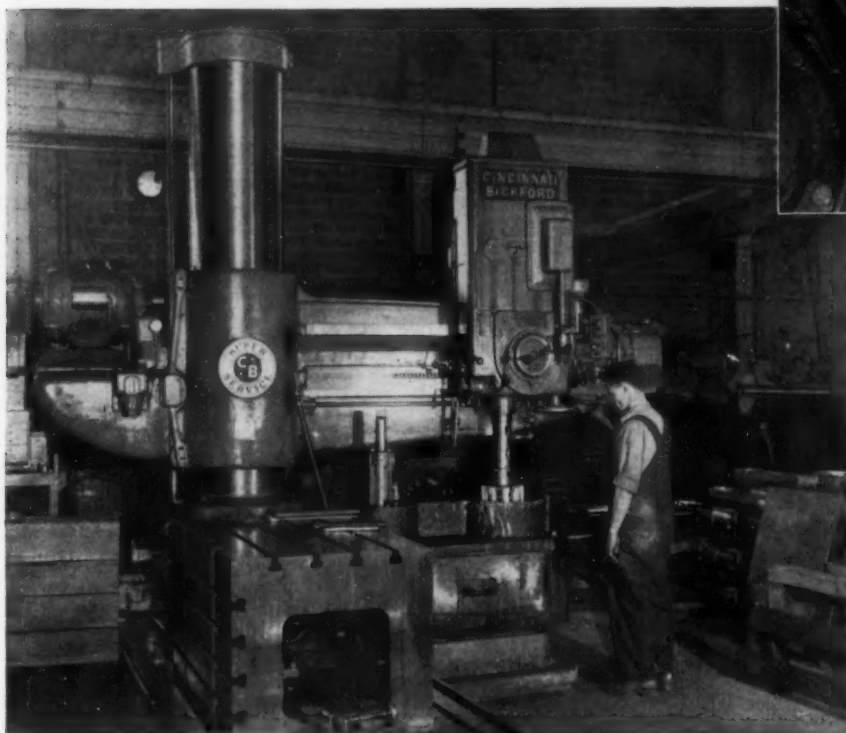
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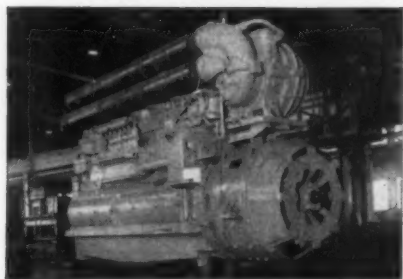


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**DOMINION ENGINEERING WORKS, LTD.**



*These rods are for Diesel electric locomotives. Large end of rods is 8 1/8" diameter. Small end is 5 1/2" diameter.*



*These Diesel Engines are used on Canadian railroads.*

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The Dominion Engineering Works, Ltd., Montreal, states: "This and other Cincinnati Bickford machines were purchased on the recommendation of shop personnel which, we think, speaks for itself"

The high productiveness, ease of control, accuracy and stamina of Cincinnati Bickford Super Service Drills, and their versatility, make them outstanding performers.

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**RADIAL AND UPRIGHT DRILLING MACHINES**

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## THE IRON AGE Newsfront

► Automotive engineers have yet to find a wholly satisfactory substitute for nickel though they've spent a fortune in research on the problem. Nickel promises to get even tighter. Despite production gains, applications are climbing even faster. One reason: It is constantly being used to replace other metals which are in even shorter supply.

► Platers estimate that they have been able to reduce automotive nickel requirements by more than 50 pct by using thinner deposits where it is used and dropping it entirely for decorative parts.

One technique is to clean parts in a synthetic detergent to remove most contaminants so that electro cleaning prior to plating is more effective in producing a chemically clean surface. This makes thinner nickel plating more effective.

► Substantial savings in tooling expense are possible through use of scale models or even full size plastic prototypes of manufactured products. The technique can be applied to almost anything from autos to roller skates, is being considered for prototypes of large machine tools.

Experimental runs on relatively large parts can be made of fibrous glass reinforced plastics to produce a strong part and permit study of design problems, consumer acceptance, etc., all at very low die cost.

► The head of the West German steel industry association predicts that West German steel output may reach 18 million net tons a year by 1955--which might put Germany in third place, after the U. S. and the U.S.S.R. (The United Kingdom is now in third place with about 17.7 million net tons.)

► While the Administration berates private power companies for trying to save their property, OPS district officials are making speeches and beating the bushes to urge that the entire Defense Production Act be retained in full. They're not suggesting letters to Congress but they are asserting that decontrol would be unwise, that controls must be maintained in full.

► Add clutch plates and brake drums to the list of auto parts being cast experimentally in ductile iron.

► The Army does not yet have a good vehicle for traveling over snow, ice and swamps; it is pushing efforts to design a good vehicle for these uses. Low temperature lubricating oils and anti-freeze that remain liquid at -90°F are now available--which is more than could be said when such vehicles were built a few years ago.

► Molybdenum's high melting temperature (4750°F) and thermal conductivity (seven times that of austenitic stainless steel) make it a prime target for study by aircraft metallurgists. Molybdenum alloys can be fabricated by welding but there are still a number of problems to be licked.

► The French are building a turbo prop aircraft engine to prove their theory that it is a better bet for commercial planes. Inventor Louis Breguet claims that the British Comet could carry 80 passengers instead of 40 and do 440 mph if it used turbo props.

# The only rectifier welder designed to eliminate stack failure!

**High-velocity,  
DOWNDRAFT VENTILATION**

**keeps rectifier stacks  
cool in the**

**A.O.SMITH  
D.C. WELDER**

**Location** of rectifier stacks in the flow of cool, clean air entering the top of the A. O. Smith D.C. Welder assures positive cooling of these most critical parts.

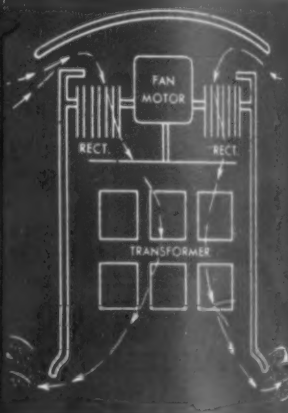
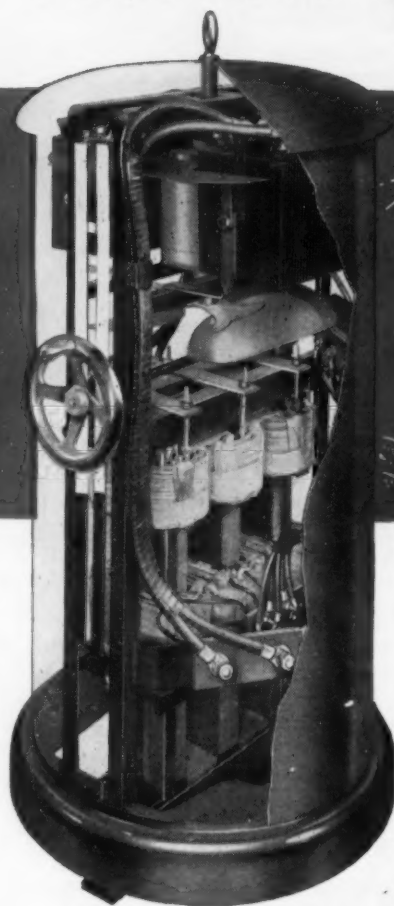
**Wind tunnel** design, proved for more than a decade in A. O. Smith Heavy Duty Welders, blasts cool air down and over rectifier stacks. This prevents stack failure. In addition, clean rectifier stacks and clean glass-insulated heavy copper transformer coils are assured. Maintenance down-time is thus avoided.

**This marked advance** over conventional rectifier-type welders solves overheating problems, ends limitations on duty, avoids introduction of floor dirt and eliminates rectifier stack failure.

**Other refinements** provide effortless amperage control, universal application and economical operation. They, too, are exclusive in this advanced design, rectifier-type, D.C. Welder.

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Sectional view of the new A. O. Smith Rectifier-type D.C. Welder and diagrammatic drawing show ideal location of stacks and circulation of high-velocity air through the welder.

Available in 200-, 300-, and 400-amp. models.



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# STEEL: Strike Talks Flop Over Union Shop

**Negotiations stalemated over USW demand for union shop . . . Was last obstacle as wage matters seen as settled . . . Package of 22¢, \$5.50 steel price rise was seen—By W. V. Packard.**

Steel strike negotiations fell flat on their face last Monday night, tripped by the sole major stumbling block to settlement — the union shop. The deadlock was one of principle rather than wages and fringe benefits. Chief of the United Steel Workers Philip Murray showed an unbudging resistance on the union shop issue. And the harmony achieved through feverish collective bargaining over the weekend went dismally sour.

It was plain that on such matters of wages and fringe benefits the union and the industry had achieved near agreement. Optimism in industry was high and Dr. John R. Steelman, head of the Office of Defense Mobilization and "sponsor" of the bargaining, saw encouragement in every step. Success so tantalizingly in reach made sudden failure all the more stunning and bitter.

**Blames Union Shop**—John Stephens, representing U. S. Steel Co., said immediately after talks last Monday that the industry had made its third and final offer. (See next page.) He blamed union shop for the collapse. Mr. Murray

said some money matters had yet to be settled.

"We refuse to grant the union shop under the firm belief that in the United States membership or non-membership in a union is a matter of free choice," he said.

Meanwhile Mr. Murray had something to say about steel production for the military: His union "would cooperate in assuring production of military requirements to armed forces combating communist aggression." Mr. Stephens agreed that such arrangements had been made.

At press time details of how military steel would be produced in strikebound plants were vague. But assuming that the government would advise defense contractors to place military orders at some steel plants, it was apparent that this could be the root of grave misunderstanding. Where would military orders begin? Who was to decide if they were bona fide military orders—the union?

**Wage Package** — Final settlement would have included a total wage-fringe package costing around

22¢ per hr — probably on a 2-yr basis. Higher steelmaking cost would have been partly compensated by a price increase of about \$5.50 a ton.

Now for the details. Wage Stabilization Board recommendations for a 2½¢ per hr wage increase on July 1 this year and another on January 1 next year were to have been translated into an immediate raise. This would have brought such an immediate wage boost to about an average 16¢ an hr. Cost of fringe adjustments would have run about 5½¢ an hr, bringing the total cost of the package to about 22¢ per hr.

Other terms of the contract would have included six paid holidays, with double pay for work on these holidays; 3 weeks' vacation for 15 years' service; increases in shift differentials to 6¢ and 9¢; and reduction in the southern differential from 10¢ to 5¢.

The union shop would compel all workers to join the union within a specified time. The union wants union shop for three reasons: (1) Union security; (2) to prevent some workers from getting a "free ride"; (3) to be competitive with the United Mine Workers.

**Compromise** — The stumbling block of extra pay for Sunday was



IN SESSION: Labor and management representatives ponder steel wage negotiations in Washington. Left to right: Benjamin Moreell, chairman, Jones & Laughlin Steel Co.; John A. Stephens, vice-president, U. S. Steel Co.; Charles White, president, Republic Steel Co.; David McDonald, secretary-treasurer, CIO United Steel Workers; Philip Murray, CIO president; and Arthur Goldberg, CIO general counsel.



**HAPPY TALK:** Eugene G. Grace, chairman, Bethlehem Steel Co., left, and Benjamin Fairless, chairman and president, U. S. Steel Co., look happy (temporarily) at last week's conference of steel executives in New York.

to have been compromised and included in the cents-per-hour advance. Union had demanded extra pay for Sunday because some other industries pay it. Companies have resisted because steelmaking is normally a 7-day operation. It isn't feasible to shut down furnaces over the weekend.

A steel price increase of about \$5.50 a ton would be only \$1 a ton more than the government's best previous offer to the companies. This was later withdrawn. In its place were substituted price increases under the Capehart Amendment of about \$3 a ton which were declined.

**It's Not Money**—Progress was rapid from the beginning. Money differences were not the critical points of impasse. Nor was the gap between company and union negotiators so wide, but it was deep. The cleavage had been deepened by name-calling and by government intervention. The Supreme Court decision helped clear the air for bargaining. Its finality, and the congressional and public aftermath, put tremendous pressure for agreement on all sides.

Asserting that production of direct military steel items alone was not enough, President Truman on Tuesday afternoon asked a joint session of Congress for legislation to empower the government to take temporary control of the steel mills, including power to raise wages.

The strike is already a costly

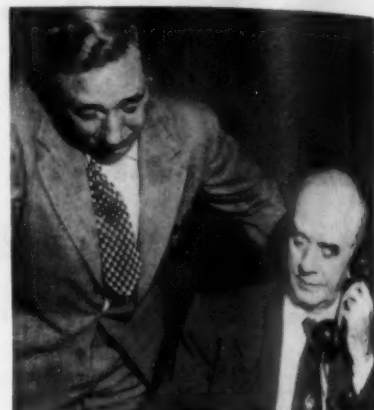
one. In addition to 650,000 unemployed steelworkers, more than 100,000 other workers have either been laid off or have left their jobs in sympathy. Included are an estimated 40,000 coal miners in captive mines, either furloughed or laid off; an estimated 35,000 railroaders were also laid off; miners in the iron range struck in sympathy.

**Ore Boats Docked**—Almost complete was the tieup of the entire Great Lakes ore fleet of 274 vessels. If ore movement were held up for long, costly all-rail movement would be required to make up the loss. There could be an ore famine in early 1953 (see p. 74).

### Industry's Third Offer

Third offer of steel company representatives included:

1. General increase in wage rates averaging 16¢ per hr (to be applied by increasing the job class one [lowest] rates by 12.5¢ and by increasing the spread between job classes by a half cent).
2. Six paid holidays, double time for holiday workers, with appropriate provisions as to eligibility.
3. Increase shift differentials to 6¢ per hr for second shift and 9¢ per hr for third shift.
4. Three weeks' vacation after 15 years of service effective Jan. 1, 1952.
5. Decrease southern differential of United States Steel and Republic by 5¢ per hr.
6. Above adjustments to be effective upon execution of complete agreements and return to work, except that general increase in wage rates to be retroactive to Apr. 1, 1952.
7. Agreement to run to June 30, 1954, reopenable by either party as of June 30, 1953, on the subject of general adjustment of wage rates.
8. Union security provisions of present agreements which provide for freedom of choice of employees to join or not join unions will not be changed.
9. All other matters must be satisfactorily resolved.
10. Prompt acceptance of these proposals.



**STRIKE TALK:** Philip Murray, CIO and USW president, makes crucial phone call ordering a strike by his 650,000 basic steel workers. Standing is James G. Thimmes, USW vice-president and aide to Mr. Murray.

The steel production loss, at the rate of nearly 300,000 tons per day, adds up to about 2 million net tons of ingots per week. Counting 2.5 million tons lost in the two previous short stoppages (Apr. 8 and Apr. 29), total steel production so far lost during this dispute will have mounted to about 6 million tons by the end of this week.

A telegraphic survey by National Production Authority on Monday indicated that some 30 steel companies were still operating. These mills could produce about 1.1 million ingot tons (850,000 tons of finished steel) per month. This is about 12 pct of normal output.

Plants still operating were Alan Wood Steel Co.; Armco's Middletown and Butler Plants; Boiardi Steel Corp.; Braeburn Alloy Steel Co.; Central Iron & Steel Co.; Carpenter Steel Co.; Connors Steel Co.; Continental Steel Corp.; Henry Disston & Sons, Inc.; Empire Steel Co.

Ford Motor Co.; Ingersoll Steel Div. of Borg Warner Corp.; Jessop Steel Co.; Kaiser Steel Co., Inc.; Keystone Steel & Wire Co.; Knoxville Iron Co.; Laclede Steel Co.; Latrobe Steel Co.; Pacific States Steel Corp.; Phoenix Iron & Steel Co.; Simonds Saw & Steel Co.

Timken Roller Bearing Co.; Vanadium Alloy Steel Co.; Washburn Wire Co.; Weirton Steel Co.; Wisconsin Steel Co.; Detroit Steel Co.; Heppenstall Steel Co.; Mesta Machine Co.; Harrisburg Steel Co.

# NICKEL: Less Available for Autos?

**Automotive engineers meet in Atlantic City . . . Steel strike, nickel shortage biggest headaches . . . Seek new formulas for brightwork . . . Boron steel use growing**—By W. G. Patton.

Abrupt halt in the flow of steel from the mills and warehouses was not the only materials problem confronting automotive engineers assembled in Atlantic City last week for their annual summer meeting. Getting enough nickel to meet their rising production schedules was another major headache.

Further nickel curtailments are in prospect. Keeping brightwork bright promises to be a more severe problem than it has been in the past, according to informed Washington and Detroit sources. Latest reports show the demand for nickel still exceeds available supply by more than 100 pct. Promised increases in jet engine production will account for the increased demand.

As one auto engineer expressed it, "Decorative plating must first be protected. We have found no substitute that does the job at anywhere near the cost of nickel plating." Many have been tried.

**Conservation** — Currently, the auto industry is saving 30 to 67 pct of the nickel it previously used on bumpers and bumper guards. These applications, together with interior and exterior door handles and a few windows for convertibles are the only remaining applications where nickel can be used for decorative purposes.

The auto industry has attacked the nickel problem on five fronts: (1) Reducing nickel and copper on bumpers while slightly increasing chromium, (2) employing a copper-chromium-baked clear enamel sequence for exterior decorative parts, (3) utilization of White Brass, an alloy of zinc and copper, for small screws, nuts and bolts, and fasteners that were previously cadmium plated, (4) bright zinc plus a chromium flash, (5) investi-

gation of new metals for decorative finish.

The amount of nickel being used on today's cars has now been reduced by 50 pct, showing the cumulative effect of the steps being taken to conserve nickel. However, each of the methods used falls short of providing the protection the car owner previously enjoyed.

**Plating Woes**—The copper-chromium-enamel sequence has a satisfactory appearance but a cloudy finish sometimes results. The industry has also had some difficulty getting uniform results.

Bright zinc plating and a chrome flash has been investigated but has not yet found wide application in American motor cars, according to industry sources. This plating sequence gives a high luster without a bluish appearance. However, some difficulty has been encountered in maintaining the plating bath. Bright zinc has found wide application for toys, metal furniture and bicycles. Such finishes, it is indi-

cated, have their greatest field of application for interior use.

Detroit electroplaters are overlooking no bets in their effort to find a satisfactory bright finish for cars. Investigation shows, however, that other metals that might be employed either cannot be plated or else the cost is far out of line.

It was explained to the SAE engineers that Canadian production of nickel as well as imports from Cuba and other world sources are increasing. However, these gains have been offset to some extent by increased calls for nickel as a substitute for other alloys in short supply. The use of an increased amount of nickel as a substitute for cobalt and tantalum in jet engines was mentioned as an example of the higher demand.

**More Boron Use**—Use of boron steels is continuing to increase. The April melt was 58,000 tons, a substantial gain over the total reported early this year. Except in the truck field, boron steels have found only limited application in the auto industry. "Dollar metallurgy" was offered as an explanation for the present situation.

Chemists, however, have come to the rescue of Detroit materials engineers in two important ways. Synthetic fabrics are replacing wool fabrics for many cars, particularly in the low price field. The newest synthetic fabrics wear better, are water-repellent and stain-proof and save as much as \$1 per car. The runaway price of wool in the world market following Korea has hastened this development, which is probably here to stay.

**Rubber** — The industry is also getting many new kinds of synthetic rubber. The new materials offer improved resistance to heat, acids and oils and, in some instances, have improved resilience. Particularly for its mechanical parts, the industry is today using "tailor-made" rubber. There are now more than 600 different formulas to choose from, according to one rubber expert who was visiting last week at Atlantic City.



"He never bought that new car from overtime—his wife raises potatoes on the side."



## ORE: Steel Strike Cuts Shipments

**Little chance of maintaining '51 records . . . Average monthly shipments at 12-million-ton mark this year . . . Stocks at furnaces, docks high . . . Needs unchanged—By E. C. Beaudet.**

Ore boats plying the Great Lakes started heading into ports last week to wait out the strike in the ore mines which followed the walkout of steel workers. Miners, members of the United Steel Workers, who had been conducting their own negotiations with the ore companies, left their jobs in sympathy with the steel walkout.

Ore fleet crews were kept on the vessels in hope of an early settlement of the strike. But negotiations failed in Washington.

As the strike entered its second week there was slim chance that the all-time record Lakes movement of 89,092,012 gross tons set in 1951 would be broken this year. Just how long shipments could be halted before a serious shortage of ore for the winter stockpile would result was a matter of speculation.

**High Movement**—Shipments of iron ore were running a little over 12 million tons per month prior to the strike. The week before the walkout took place an extremely high movement of 3,125,969 gross tons was shipped. Part of the high movement was due to increased capacity which is expected to boost trip capacity of the fleet by some 200,000 gross tons before the end of the current shipping season.

Stocks on hand at furnaces and docks are in a healthier condition than they were last year at this time, possibly aided by a fairly early season. The improvement was in the vicinity of 4 million gross tons. Stocks stood at 19,591,854 gross tons as of May 1 compared with 15,071,761 tons at the same time last year. Whether this improvement would enable the mills to get through the winter without serious trouble, of course, depended on the effects of the strike.

Steel companies are expected to need at least as much ore on hand coming into the winter as they did last year. As of Dec. 1, 1951, ore stocks at docks and furnaces totaled 49,098,907 gross tons, a comfortable supply. A little over 12 million tons was being shipped monthly at the time of the strike.

**Three Weeks**—Of this, over 7 million tons went into current consumption, the rest slated for the winter stockpile. Some industry observers felt that the loss of ore from a long strike could seriously affect winter supplies.

The whole question is plagued with uncertainties. There was another always unpredictable factor — the weather. In the event of favorable weather conditions at the end of the season some gain

could be made on any possible deficit. On the other hand an early season ending could work the other way. Also a matter of concern was an anticipated shortage of ore cars.

**Some Breaks**—Mills have a few factors in their favor to mitigate the loss. All rail movement so far this year has been held to a minimum. This could be stepped up to help alleviate a shortage in spite of its high cost. Increased fleet capacity will help some. Also demand for ore to supply new blast furnaces may not be so high. Completion of these facilities is running behind schedule.

The Canadian fleet, which is undergoing its own expansion with some seven boats expected to be added this year can be of aid. Legislation to permit its use in the ore trade is still pending in Washington but there is little doubt of its passage. Lighter grain movement may release more Canadian ships to the U. S. ore trade.

### Lithium Production Goals Set

Defense Production Administration's program and requirements office has announced a production goal of 10 million lb of lithium compounds by 1955.

About 7,360,000 lb of new capacity would have to be added to 1951 facilities. All but about 640,000 lb has been tentatively programmed.

Some 1.5 million lb in new capacity has already been constructed. Certificates of necessity for another 5,220,000 lb have been recommended for approval—leaving about 640,000 lb to go.



# SCRAP: Strike Slugs Slipping Market

**As steel industry curtails shipments scrap industry pauses to reflect on where it's been and where it's going . . . Mill stocks high . . . Below ceiling scrap sales—By E. C. Beaudet.**

As the strike in the steel industry called a halt to normal, heavy shipments of scrap iron and steel last week, the scrap industry began to puzzle out what had been happening and what could happen to its market. Before the third, most serious shutdown of the steel industry this year, the scrap market was entering a period of decline.

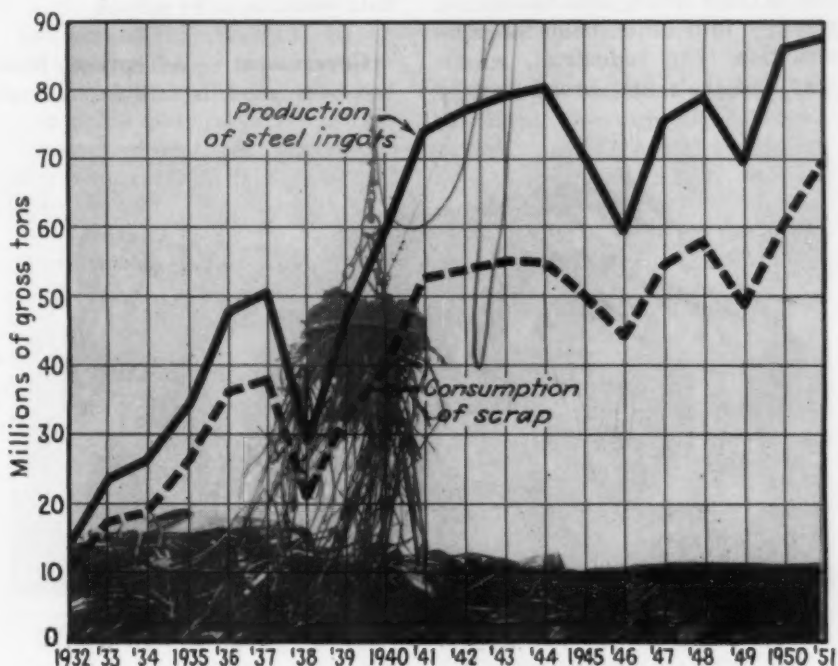
Mills were not anxiously pushing for scrap and inventories reached anywhere from 4 to 6 weeks' supply in big steelmaking centers. Some grades of cast and dealer blast furnace scrap were going at under-ceiling prices. Freight rates were shortened and inspection was rigorous. Diminishing interest was being shown in No. 2 heavy melting steel and bundles. These signs seemed to point to a drop in open-hearth prices by July.

**Below Ceiling—**Onset of strike brought out some argument as to whether prices on openhearth grades could be held at ceiling immediately after the strike ends. Last week one small midwestern steel consumer not affected by the strike was in the market trying to buy machine shop turnings, short shoveling turnings, No. 2 steel and No. 2 bundles at well below ceiling prices.

Some other operating producers were scrambling for car wheels and molds to make up for loss of pig iron in openhearth and offering ceiling prices. Big consumers are storing railroad and industrial scrap in yards throughout the country and are paying \$1.50 per gross ton plus switching charges for the privilege.

**Tall Stockpiles—**Those forecasting a further decrease in scrap demand once the strike is over base their argument on: Mills prior to the strike were continuing to build up inventories already at comfort-

able levels. Accumulation at storage yards during the strike would swell these inventories even more. Also scrap, whether at its origin or some other point, would build up as the strike continues. The in-



dustry ships about 750,000 tons of scrap a week which will be building up somewhere.

Since under-ceiling prices can go only one way, dealers were not inclined to lay down tonnage during the strike at present high prices. Some dealers last week had already lowered their buying prices to cover short orders. Laying down tonnage increases dealers' costs. With no assurance of a ceiling price once buying resumes, they were not taking any chances.

**Its Good Points —** While the short term outlook for scrap seems bearish, the longer viewpoint has some healthy aspects. A few weeks of shutdown will assure an extremely high rate of steel production for the fourth quarter at least

and may carry over into the first. Steel producers who were playing scrap inventories close until they could get a better idea of how fourth quarter orders shape up may intensify purchasing.

The corresponding loss of ore due to walkouts in the ore mines will cut down on the amount mills are able to stockpile for the winter months. Hence a larger scrap charge may be used. Also price strengthening may be given blast furnace grades since they give

mills the means to boost hot metal production in the blast furnaces. Now-feeble cast grades could draw price strength from a long strike. Foundries which are shut off from sources of pig iron will be steadily eating into inventories and cast scrap may become more attractive.

## More Synthetic Cryolite Asked

Defense Production Administration has called for an expansion of 21,600 net tons in synthetic cryolite capacity to bring potential 1955 production to about 50,000 tons.

Present stocks of refined natural cryolite now in the hands of industry are rapidly being used up, the agency said, and the biggest source, natural deposits in Greenland, is being worked out. This source is given about 10 years to go.



## HOUSING: Steel Home Sales Gain

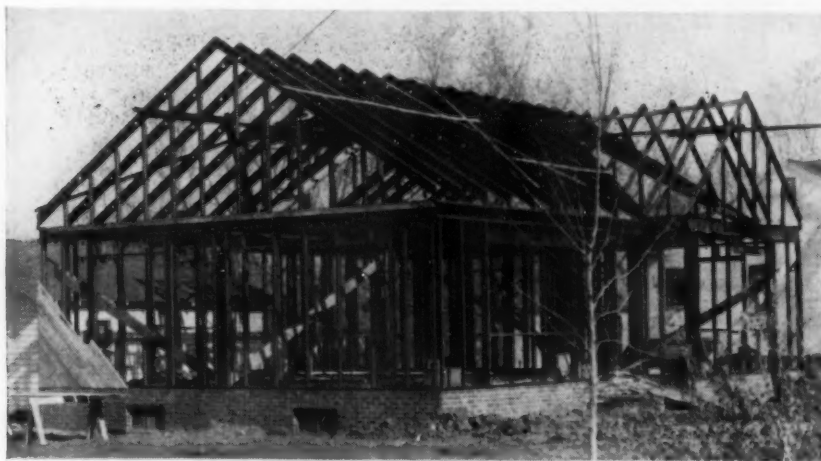
**Light steel buildings no longer restricted to industrial use . . . Farm, government use growing . . . Prefab homes are newest challenge . . . Marketing difficult—By K. M. Bennett**

The Lonesome Pine may stay that way if sales anticipations of light steel building fabricators are correct.

Light steel buildings, despite a sales drop that began in first quarter of this year, are advancing steadily into other fields of construction than industrial, where they had their first broad use.

National Production Authority's decision that the light steel used was a "B" class, unallotted item didn't help a great deal. And even with more steel available, the problem of putting salespeople into the field remains to be solved.

**Government** — Acceptance here has been good, is still expanding.



**FRAME:** This light steel house frame is shown in the finishing stage. Nearly any type of siding (including concrete) and insulation may be used. Structure was made of sheet steel in gages ranging from 1/32 to 3/16 in.

**Agricultural**—Steel buildings on the farm have been advancing steadily on a nationwide basis despite several thorny obstacles. It was necessary to set up a distributor organization from the ground up. In some cases farm implement dealers have been used.

But fabricators agree that nowhere has it been possible to bring salesmen into direct, continued contact with potential agricultural customers. As a result, when steel supplies fell off, fabricators had to ignore this just-blossoming market, had to supply their older industrial customers. A considerable reselling job had to be begun. At least one large fabricator, after a healthy opening sprint in agricultural selling, was cut short by sinking steel supplies 1 year ago.

Even the Forestry Service, charged with controlled harvesting of the nation's lumber, is using steel buildings in increasing quantity.

Defense cutbacks hit light building fabricators hard. Termination of building for the government grain storage program, and drops in military buying as service camps and arsenals were finally refurbished, cut off a considerable source of income.

Increased government buying at city and county levels has partially offset this, however, and the national government agencies other than defense (forestry, flood control, agricultural) have been evincing increasing interest.

**Housing**—Constitutes a special bracket. Here demand is much

more potential than realized. At least one producer of prefabricated homes is rumored to be planning a considerably larger use of steel in his product. Classification of light steel members as a "B" product has given them more attention by contractors and potential homeowners. This could eventually constitute the biggest market of all.

Again, difficulty is encountered in achieving sales coverage. And considerable consumer education must be done. In the meantime, a large producer reports his market holding well, and that he could use considerably more steel tonnage than he has been able to get. In an increasingly competitive market (toughest since 1949) he claims he can meet the prices of conventional housing with many selling points to spare.

**Industrial**—This wheelhorse of the light steel building market is beginning to offer some difficulties. Cutoff of defense expenditures has now reached the subcontractor, with a resulting drop in demands for increased factory and warehouse space. Stifling taxes that have siphoned off working capital, increased labor costs, and the steel strike have jointly discouraged a number of expansion plans that would have offered a juicy buying plum, fabricators report.

They have many nibbles, but all are cautious, tentative, apt to buck and run with a turn of the market. In industrial building, light steel building sales were low as 1952 came in, lagged behind in their usual second quarter upturn. Some reports of increased industrial selling in the last 2 weeks are regarded hopefully, but all agree that 1952 sales will be no more, possibly less, than 1951's record selling year.

Fabricators are not unduly pessimistic. Their market scope is expanding. Their raw materials are in greater supply. Consumer resistance is falling. Though some dealer inventories are up (as indicated by comparatively rapid 30-day deliveries now possible) the market is holding.



# GEARS: Order Index Strips Teeth

**Shipments continue at sprint pace . . . But new orders show steep decline . . . Caused by stretched out defense timetables, soft appliance market . . . No one's worried—By G. Elwers.**

"We are shipping gears as fast as we can make them. Shipments this year will at least match those of 1951—and perhaps exceed them. But the prospects of continuing business at this level are shriveling a little at the roots. Bookings in the contract gear industry have been steadily declining for the past few months and a spectacular recovery is not imminent."

This was the sum of opinion of many contract gear makers interviewed by THE IRON AGE at the American Gear Manufacturers' Assn. convention last week at Hot Springs, Va. Most of the more than 260 members attending represented contract shops.

**Steep Drop**—In 7 months the new order gear index had taken a roller coaster dip. It stood at 703.4 in October 1951 and by April of this year it had fallen to 478.7. Gist of speculation in Hot Springs corridors was that a further decline would show up when May statistics were tallied. The downhill course was seen as continuing into June.

It should not be construed that gear makers are facing the poorhouse. There was little worry that a slump of major proportions is shaping up. Most of the drop in new orders is attributed to stretching out of defense output timetables and a dull home appliance market.

AGMA members pointed out that although military production has been extended it has not been decreased. The same amount of business should accrue to them but over a longer period. And they are not too pessimistic about the future of appliances when national income is so high.

**Backlog Uneven**—As is true in many industries today, the back-

log is far from being evenly distributed across the association's membership. In general however, gears of medium size are moving slowest, and so most capacity is available in the range from about 12 in. to 24 in.

Business also varies by location, with contract shops dependent on nearby industries such as washing machine manufacturers in the doldrums, while those located in defense manufacturing areas are plenty busy.

Speakers at the AGMA meeting included Dundas Peacock, controller, The Elliott Co., who dis-

cussed the MAPI Accounting Manual which he helped write, and J. B. Hopper, chief engineer, Lufkin Foundry & Machine Co., who talked on "Ductile Iron As A Gear Material."

**Best for Small**—AGMA is recommending MAPI accounting information as most useful to the small contract gear shops which make up most of its membership. Mr. Hopper discussed tests which showed ductile iron gears perform almost as well as cast steel gears in speed reducer sets of various sizes.

Mr. S. L. Crawshaw, asst. to the president, Western Gear Works, Lynwood, Calif., was elected president of the AGMA at the meeting. G. H. Sanborn, Fellows Gear Shaper Co., was named vice-president. R. B. Holmes, Link-Belt Co., was elected treasurer.

## Nuclear Gaging:

**New production technique increases coated abrasive production control.**

A new nuclear gaging technique to be used at Carborundum Co.'s Products Div. plant in New York is reportedly selling new precision standards in the manufacture of coated abrasives. The company claims this development makes it possible to control thickness and

density of adhesive, abrasive, and final adhesive coat to within 1 pct of specifications.

Worked out with specialists of the Industrial Nucleonics Corp., Columbus, Ohio, the new technique integrates five beta-ray gages, actuated by radioisotopes, into the coated-abrasive machine production line. The five gages continuously assess weights of backing and abrasive, weight after pre-cure, and weight after final adhesive application on a line that travels up to 350 ft per min.

**Strict Specifications**—Carborundum Co. reports use of radioisotope gaging on a continuous basis makes it practical for customers to order coated products to strict specifications. An additional advantage claimed, is that users can get precise duplication of a previous order since the company will have a graphic production record of every roll of coated abrasive produced.

Gages used in the new gaging method are reported not to be influenced by temperature, dirt or humidity. They do not contact the moving sheet at any time.



**RADIOACTIVE:** Strontium 90 provides beta rays for gaging weight and density as backing material passes through abrasive coating machine at a Carborundum Co. plant.

## COPPER: Hot Penny Gets Hotter

**Still no solution to red metal supply problem . . . Industry repeats contention that controls must go or world price be subsidized . . . June allocations set—By A. K. Rannels.**

The government's hot penny grew hotter last week as the experts conferred among themselves and with industry, trying to get the answer as to how to keep copper supplies flowing.

"No conclusions" was the verdict by Acting Mobilization Director Steelman after meeting with industry. Copper men repeated what they told National Production Authority earlier—that high cost world copper must be subsidized or all price ceilings thrown out.

But there are to be further meetings with the industry on dates to be determined later.

**More Trouble**—New problems are cropping up. For example, domestic customs smelters are stymied until Office of Price Stabilization clears up their position. Under present rules, they apparently cannot sell refined copper from imported ores, regardless of the added cost, for more than the domestic ceiling.

In order to spread the load "equitably" among all users, NPA has been standing by its earlier decision to make allocations on a basis of 60 pct domestic and 40 pct foreign.

Meanwhile, the agency has gone ahead and made June allocations on about the same tonnage levels as May—although the monthly total was somewhat lower than the average for the preceding 8 months.

**Quotas**—Brass mills were allocated 46,361 tons of refined copper; copper wire mills, 49,538 tons; foundries and others, 6000 tons; and exporters, 3000 tons.

This is a total of 104,899 tons, about 301 tons more than for May but 9136 tons less than the August-March average.

Likewise, scrap allocations varied only slightly from May levels.

Brass mills were allocated 45,050 tons; foundries, 11,250 tons; and all other purposes, 26,900 tons—a total of 83,200 tons compared with 83,050 for May.

**Deliveries**—Simultaneously with the announcement of June allocations, NPA reported that first-quarter deliveries of brass mill products totaled 352,000 tons against requirements of 517,500 tons. Allocations were issued for 347,000 tons.

Wire mill product deliveries were 173,500 tons, against requirements of 266,500 tons and allocations of 189,500 tons.

For foundry castings and powder mill products, the quarter's figures were 134,000 tons in deliveries, 223,000 tons in requirements, and 152,500 tons in allotments.

### "Small Order" Pricing Clarified

Producers of mechanical precision springs, metal stampings, and screw machine products who had not been in business for a quarter-year on Jan. 31, 1951, will use their first 3 operating months as a basis for obtaining "small order"



"Here is the steel company representative with the sample you requested, Mr. Jones."

price exemptions provided in Ceiling Price Reg. 119.

When first issued, CPR 119 did not specify how such exemptions could be gained by manufacturers who had not operated for a full quarter in the base period Feb. 1, 1950-Jan. 31, 1951. This omission was corrected in Amend. 2, CPR 119, effective June 9.

Exempted sales in any quarter may not exceed the total amount of such sales in the manufacturer's first 3 months in business. On ending his first year of operations he may choose any other 3 consecutive months in that year as a basis for figuring exemptions.

### Industry Controls This Week

**Fuel Briquets**—Amend. 1, SR 78, GCPR grants ceiling price increase to manufacturers of coal and petroleum briquets and packaged fuel sold in part of north-central U. S.

**Heating, Refrigeration**—Amend. 47, CPR 22 defines the heating and refrigeration products on which manufacturers must file Public Form 128.

**Price Exemption**—Amend. 2, CPR 119 establishes basis of small order price exemptions for producers of mechanical precision springs, metal stampings and screw machine products who had not been in business for one quarter-year on Jan. 21, 1951.

**Steel**—Dir. 12, CMP Reg. 1 places ban on steel shipments to manufacturers of consumer durable goods. Dir. 13, CMP Reg. 1 establishes 12 categories of essential defense production which are to receive priority treatment from operating steel plants. M-105 provides iron and steel industry with method of securing priorities on MRO supplies up to \$5,000.

### Latest Government Appointments

Albert A. Carretta, member, FTC;

Lee A. DuBridge, chairman, science advisory committee, ODM;

Charles Evans, assistant chief counsel, OPS;

George E. Holbrock, director, Chemical Div., NPA;

John C. Kinnear, representative, copper-lead-zinc committee, IMC;

Ted E. McHold, director, Products Analysis Div., NPA;

Drexel A. Sprecher, assistant administrator, SPDA.

## Law:

Action on price infractions will keep on after lifting of order.

Legal actions started by the Federal Government against alleged violators of pricing regulations will be continued even if those regulations subsequently have been suspended.

This is the intention of Office of Price Stabilization, according to its chief, Ellis Arnall. Although the principal concern of OPS enforcement officials is to insure compliance with orders still in effect, Arnall says, it is important also to continue "proper prosecution" of suspected violations occurring before controls were removed.

Arnall asserts that it would "be unfair to those businessmen who have complied and continue to comply, to overlook violations by their less conscientious competitors while applicable regulations were in effect."

In connection with enforcement operations, Federal Judge John Knight of U. S. District Court, Buffalo, N. Y., has ruled that OPS has the right to examine books and records of business firms affected by its regulations.

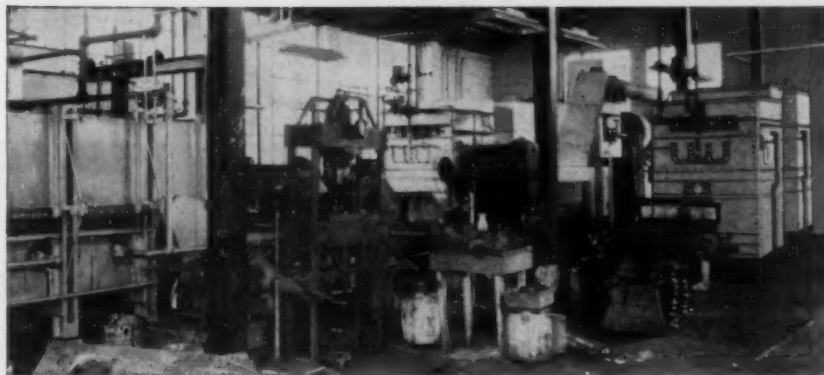
## Steel Export Embargo Ordered

Last week the government clamped a ban on export shipments of steel for the time being—unless the products could be shown as "essential to direct military production" or defense supporting projects.

Action was a companion move to the warehouse freeze by National Production Authority which did not include exports in its new Direction 12. Reason was the same: the steel strike.

Embargo applies to all steel shapes and forms covered by CMP. They are identified in the Positive List by the letter "C".

An order was being prepared over the weekend which would permit extension of the embargo, if seen as expedient, to steel export licenses which have been already granted.



## Niagara Aero Heat Exchanger quickly pulls down the initial peak load of heat in quenching ... and saves cooling water

Accurate control of quench bath temperatures and quickly effective capacity to handle the initial peak load of heat in quenching prevents production set-backs, increases the output of your heat treating department, prevents oil fires, saves you losses from rejected parts.

Niagara Aero Heat Exchangers give you this control in both furnace and induction hardening methods. They prevent both over-heating and over-cooling of the quench bath. Hundreds of heat treaters know they prevent many troubles, constantly improve quality and increase production.

They quickly pay for themselves by saving cooling water coils and extend your quench capacity without extra water or cooling tower.

*Write for Bulletin #120 giving complete information.*

## NIAGARA BLOWER COMPANY

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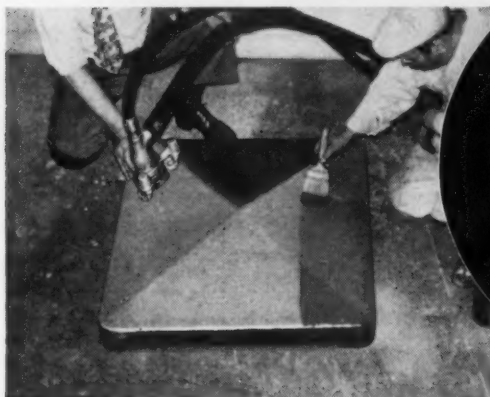
*Experienced District Engineers in all Principal Cities of U. S. and Canada*



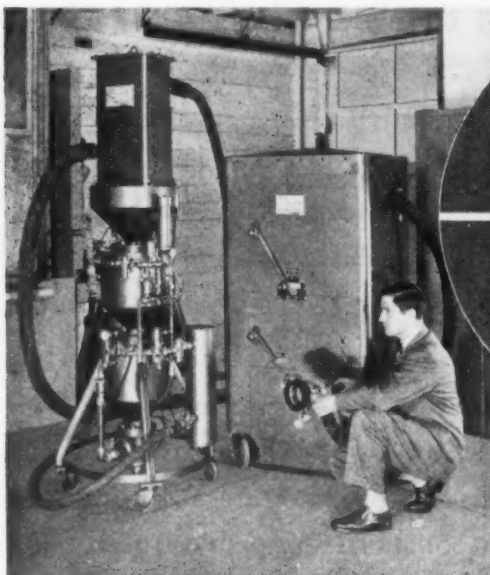
# BLAST CLEANING

## WITHOUT DUST

VACU-BLAST scours the surface, eats the dust and reclaims the abrasive — all at once!

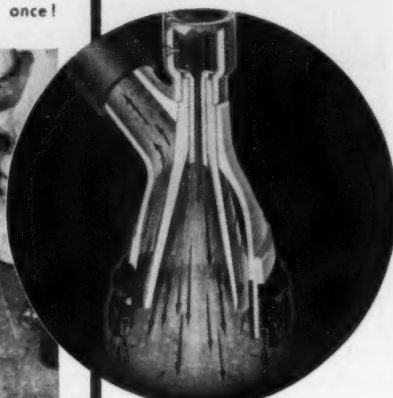


Right in the midst of your working shop, Vacu-Blast removes rust, paint and scale from metal, masonry and wood with a thoroughness and efficiency that only abrasive blasting provides. Surfaces are perfectly prepared for welding, painting or process requirements, yet there's no dust or scattered abrasive to interfere with other operations.

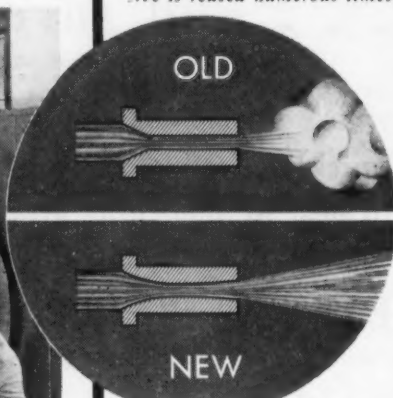


This is Vacu-Blast's working team — the blast gun — the combination generator/reclaimer, and the dust collector. All are compact, portable and easy to move around.

## OR GRIT



The abrasive, dust and debris are confined within the blast gun — they are picked up by Vacu-Blast's unique, patented vacuum return. The blasted surface is left clean and dustless. Your shop is protected from the nuisance of scattered dust and grit. Valuable abrasive is reused numerous times.



Newest Vacu-Blast improvement is the flared, high efficiency nozzle that does up to 25% more work per hour than previous nozzles. Developed through extensive research, the throat design of this new nozzle eliminates inefficient shock waves, resulting in full power flow of abrasive. This new nozzle is now provided on all Vacu-Blast equipment, and has been made available to all present users.

# VACU-BLAST CO. INC.

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## Controls

### OPS Lists PF 128 Heating Items

Heating and refrigeration equipment manufacturers can get a clearer definition of the products on which they must file Public Form 128 by reading Amend. 47 to Ceiling Price Reg. 22, which became effective June 9.

Amend. 47 was written to correct errors and omissions occurring in an earlier amendment concerning Form 128, on which manufacturers report newly-computed ceiling prices for items not sold between July 1, 1949, and June 24, 1950. One correction, for example, makes plain that automatic temperature controls are exempt from Form 128 coverage.

Ceiling prices for the following items must be reported under the amendment to Office of Price Stabilization on the form:

Heating equipment—vented and unvented circulating space heaters (oil, gas, electric, and coal fire), gas logs, portable utility room heaters, and portable gas or electric radiant heaters.

Refrigeration equipment—household refrigerators and home and farm freezers.

### No Capehart Boosts for Retailers

Retailers and wholesalers cannot now obtain Capehart-type price increases, despite a ruling in May by U. S. Emergency Court of Appeals that all distributors, from manufacturers through final sellers, may apply for such hikes.

Recent government filing of an appeal that the Supreme Court reverse the lower court decision effectively blocked actual use of the ruling. Filing action was taken as the top-level jurists prepared to suspend operations for the summer, making it virtually certain there will be no settlement of the case before fall.

In addition, Senate Banking Committee has altered the Capehart Amendment to the Defense Production Act, specifically limiting its application to manufacturers and processors.

## Renegotiators Explain Terms

A new Renegotiation Board staff bulletin explains the difference between a "clearance" and a "cancellation" in instances where renegotiation cases are concluded.

A cancellation of assignment of the case to a regional board may be issued, the bulletin states, if it is clear from the contractor's initial report and from an appraisal of the early stages of renegotiation proceedings that no excessive profits have been made.

On the other hand, a clearance is not issued until after the board makes a determination of the facts. If the board obtains from the contractor complete and pertinent information needed in making such determination, and no excessive profits are found, it issues a clearance notice to conclude the case.

## Ore Demurrage Charges Lifted

Until June 16, at least, railroads serving Great Lakes ports may load iron ore and hold the loaded freight cars at any convenient points free from demurrage and storage charges.

Interstate Commerce Commission lost no time after announcement of the steel strike in issuing the service order (No. 884), similar to the one issued during the previous stoppage.

A companion order (No. 885) extends the same conditions to handling of imported ore which is consigned to strike-bound steel plants.

However, carriers must first obtain permits from ICC.

## Fuel Briquet Prices Raised \$1

Coal briquets, petroleum coke briquets, and packaged fuel sold in part of the north-central U. S. now bring the seller \$1 more per net ton, under a recent government-authorized increase.

Region affected is the area served by lake docks on the west bank of Lake Michigan and the U. S. bank of Lake Superior.

Authorization for the increase is described in Amend. 1, Supplementary Reg. 78 to General Ceiling Price Reg., effective June 2.

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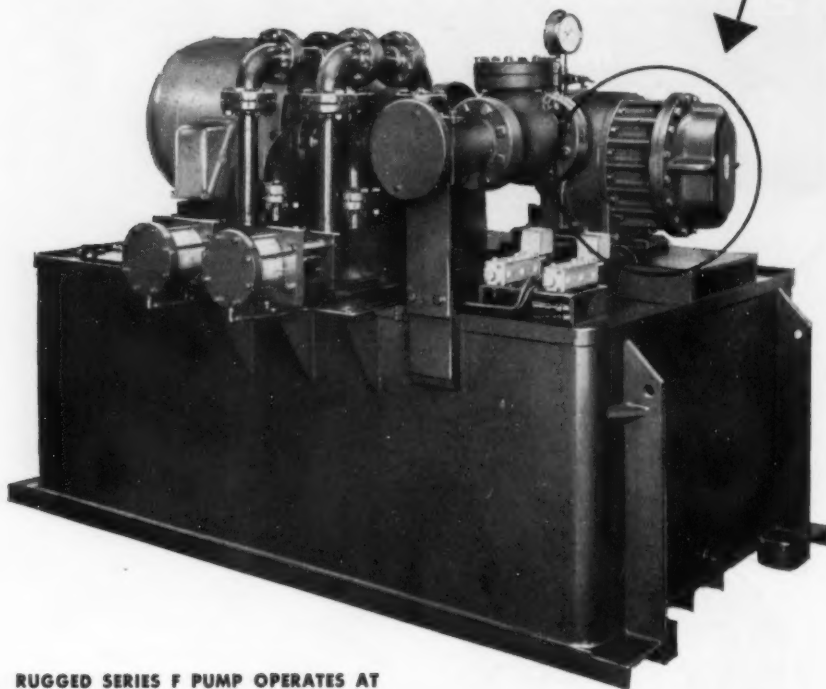
# Seneca

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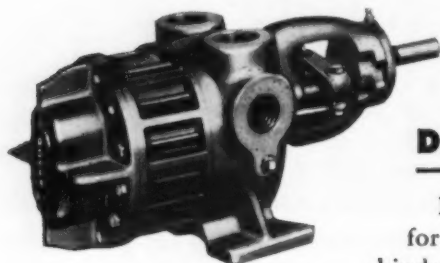
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**RUGGED SERIES F PUMP OPERATES AT  
300 P.S.I. ON THIS STEEL MILL PILING EQUIPMENT**

This power unit — used in conjunction with steel mill piling equipment — is a good example of Roper adaptability to heavy duty hydraulic applications. The unit is fabricated by the Weinman Pump and Supply Company of Pittsburgh, and the Roper used is a Series F.



### **DEPENDABILITY** *Plus*

Roper Series F Pumps are used for pumping clean liquids of all kinds, and are self-lubricated by liquid being pumped. Four-port design (eight optional piping arrangements — 4 for C.W. and 4 for C.C.W. rotation) cuts installation time and costs. These pumps are supplied with or without relief valves — with packed box or mechanical seal. Pressures to 300 P.S.I. — 1-300 G.P.M. sizes. Investigate how Ropers can fit into your hydraulic applications. Send for catalog.



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*Rotary Pumps*

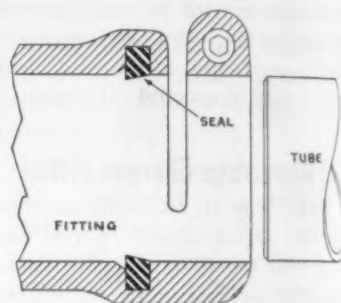
### —Research—

#### **Coupling Cuts Assembly Time**

Users of stainless steel pipe and tubing can now cut assembly costs by means of the new "Quikupl" fittings. New fittings also permit use of cheaper, thinner-walled tubing, according to The Copper Alloy Foundry Co., Hillside, N. J., manufacturers, and Peter A. Frasse & Co., New York, distributors.

Pipe is simply cut, deburred, and inserted in the fitting. Coupling is completed merely by tightening a small screw. Threading, flaring, soldering, and welding are eliminated by the new device, it is claimed.

Fittings resemble standard couplings, with the addition of a



clamp. A simple hex nut is the only tool needed to make the union. Elimination of threading makes heavy walls unnecessary.

Inside the fitting a neoprene sealing ring rides in a groove in the bore. This seal is said to maintain a squeeze fit regardless of commercial tube and pipe tolerances. Line pressure, in either direction of flow, jams the seal into a positive fit and closes any space between pipe and fittings.

For temperatures up to 275°F the fittings are in the 150 psi class, depending on corrosive agents involved. Design is said to provide for freer flow and to retard turbulence and pressure drop. "Quikupl" is made in tees, couplings, elbows, adapters.



## Jet Parts:

**Hotpoint drops jet engine parts . . .  
To retool plant for refrigerators.**

In a swift cutoff of its former defense work, Hotpoint, Inc., at Chicago, will discontinue the manufacture of jet engine components for the J-48 jet engine under a navy contract, and will retool its \$15 million Cicero plant for refrigerator production.

First refrigerators should begin coming from Hotpoint assembly lines in June, 1953, but Hotpoint will run its last jet engine component in September of this year.

Retooling of the plant will return a number of machine tools to government reserve pools, but Hotpoint's new president, John C. Sharp, was unable to give an exact figure.

**By the Wayside** — Hotpoint's withdrawal from the jet engine program marked the retirement of another major jet producer in the Chicago area, where defense cutbacks have already hit hard. Originally considered as a jet prime contractor, Hotpoint found its production commitments cut by military planners. The company could not keep a large factory area idle.

The Hotpoint Cicero plant, adjacent to the original Hotpoint stove factory, had been designed as a refrigerator plant, had never been used for that purpose. It was tooled for jet engine production instead, and the changeover to refrigerator production will now require a \$3 million outlay for new machine tools and tooling.

## Small Firms Get More Navy Orders

Percentage and dollar figures on small business participation in defense work for the Navy continue higher than data on this activity recorded in fiscal 1951.

In the 10-month period ended April 30, small companies received 22.7 pct, or \$1,795,000,000 worth, of Navy prime contracts. Office of the Chief of Naval Material says that during the corresponding months of the preceding year such firms received 17.5 pct, valued at \$791,754,000.

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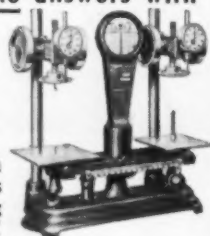
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An accurate, uniform and inexpensive means of measuring spring load and deflection! For inspection or in-use testing... to aid in designing and developing springs for specific uses or as a basis for statistical quality control. Write today for illustrated bulletin on the Torrington Spring Tester!



MODEL W-11 SPRING COILER

Wire diam. range: .015" to .072". Length per spring: 0" to 42". O. D. Coil Range: 3/32" to 1 9/16". Produces 23 to 190 springs per minute with variable speed drive. Extra wire feed gears, torsion, other attachments available.

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MANUFACTURING COMPANY  
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## Defense Contracts

### Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

**Corps of Engineers, Philadelphia**  
Water purification unit, 844, eng-36-109-52-714B, June 6.  
Box, utility, steel, 44600, eng-36-109-52-718B, June 7.  
Cover, box, steel, 4100, eng-36-109-52-718B, June 7.  
Floodlight, elec, 850, eng-36-109-52-721-B, June 7.  
Pin, insulator, steel, 15425, eng-36-109-52-726B, June 7.  
Sprayer, insect, knapsack, 1059, eng-36-109-52-728B, June 7.  
Clamp, lamp socket, steel, 29850, eng-36-109-52-715B, June 7.  
Foam making unit, 2076, eng-36-109-52-738B, June 7.  
Water purification equip, 145, eng-36-109-52-736B, June 6.  
Siren, vehicle, 1375, eng-36-109-52-575B, June 6.  
Pump, sump, 1774, eng-36-109-52-711B, June 6.

**Ordnance Tank, Automotive Center, Detroit**  
Start assy, 1000, 52-4106B, June 19.  
Gun lubricating hand, 12320, 52-4058B, June 19.  
Gun oil, 1220, 52-4058B, June 19.  
Mount truck, 7600, 52-3944B, June 19.  
Dolly trailer converter, 2895, 52-3978B, June 12.  
Gear assy steering, 620, 52-4053B, June 19.  
Kit repair rear hyd brake, 172000, 52-4073B, June 13.  
Carb assy, 34000, 52-4065B, June 12.  
Kit repair carb, 120000, 52-4065B, June 12.  
Panel instr assy, 755, 52-4079B, June 12.  
Charger magnet, 331, 52-4108B, June 16.  
Drum brake w/slinger assy, 900, 52-3993B, June 16.  
Support brake w/bearing, 150, 52-3993B, June 16.  
Replacer bearing camshaft drive worm, 1750, 52-3919B, June 14.  
Lifter road wheel, 1314, 52-3919B, June 14.  
Remover & replacer bearing cup, 1232, 52-3919B, June 14.  
Cradle removing & replacing, 565, 52-3919B, June 14.  
Remover kit valve seat inserts, 157, 52-4015B, June 14.  
Kit assy brkt eng stand cradle, 3300, 52-4015B, June 14.  
Fixture track connecting & link pulling, 7400, 52-4015B, June 14.

**U. S. Army General Depot, Memphis, Tenn.**  
Electrical supplies, compressors and automotive var, QM-40-110-52-61, June 23.  
Machine tools, var, QM-40-110-52-63, June 24.

**Corps of Engineers, Chicago.**  
Bucket, dragline, crane or crane shovel, 172 ea, B562B, June 13.  
Saw, chain, portable, 100 ea, B564B, June 13.  
Chest, tool, 309 ea, B565B, June 13.

**Bureau of Ships, Washington.**  
Marine type diesel eng, 45, 543-149Q, June 9.  
Non-magnetic swing check valves, 714, 548-586Q, June 5.

**Navy Purchasing Office, Washington.**  
Drills, twist, straight shank, 560448, 5439Q, June 12.  
Jaws, steel, vises, bench, 3537, 5006Q, June 10.  
Blades, hacksaw, 536100, 6590B, June 10.  
Drills, pneumatic, 381, 6603B, June 10.  
Scrapers, ship, 158904, 6610B, June 13.

**Watervliet Arsenal, Watervliet, N. Y.**  
Steel, rack, assy, parts for 120 MM gun, 100 ea, 32040Q, June 17.

**General Stores, Supply Office, Philadelphia.**  
Valves gate, 66980 ea, 11067B, June 16.  
Valves globe, 71589 ea, 11067B, June 16.  
Valves, 38170 ea, 11067B, June 16.

**Springfield Armory, Springfield, Mass.**  
Magazine, assy, 170000 ea, 52-333B, June 12.  
Shield, magazine, catch, 52-333B, June 12.  
Oiler, assy, 30000 ea, 52-333B, June 12.  
Grip, fore, horizontal, assy, 45000 ea, 52-333B, June 11.  
Mount, grip, 6000 ea, 52-336B, June 11.  
Sudbury Laboratory, South Sudbury, Mass.

## Contracts Reported Last Week

Including description, quantity, dollar value, contractor, and address:

Valves, assorted sizes, 108 ea, \$36,902, Consolidated Supply Co., Spokane, Wash.  
Head metal parts assy for rocket HE, 400000, \$924,000, General Motors Corp., Lansing, Mich.  
Metal parts for shell, chemical, 435100, exceeds \$250,000, The Budd Co., Detroit.  
Shell, HE, M329, 440000, exceeds \$250,000, Motor Wheel Corp., Lansing, Mich.  
Lighting fixtures, 1748, \$62,928, Branham, Marcek & Dupner, Inc., Minneapolis.  
Lanterns, hand electric, 25500, \$176,460, Delta Electric Co., Marion, Ind.  
Regulator & indicator for var aircraft, 1058 ea, \$177,965, Bendix Aviation Corp., Teterboro, N. J.  
Regulator & indicator for var aircraft, 1283 ea, \$210,562, Bendix Aviation Corp., Teterboro, N. J.  
Valve assy, var, \$86,700, Airesearch Mfg. Co., Los Angeles.

Aviation hardware parts, var, \$67,501, Douglas Aircraft Co., Inc., El Segundo, Calif.  
Maintenance parts for J46-WE-8 eng, 69858 ea, exceeds \$250,000, Westinghouse Electric Corp., Philadelphia.  
Hamilton standard propeller tools, 1022 ea, \$95,350, United Aircraft Corp., East Hartford, Conn.

Overhaul part-blade assys, 316 ea, \$150,100, United Aircraft Corp., East Hartford, Conn.  
Spare parts for SNJ aircraft, 11566 ea, \$74,233, North Amer. Aviation, Inc., Columbus, Ohio.  
Spare parts for SNJ & PJ aircraft, 381 ea, \$35,151, North Amer. Aviation, Inc., Columbus, Ohio.

Spare parts for FH & F2H-1, 131 ea, \$40,765, McDonnell Aircraft Corp., St. Louis.  
Maintenance parts required to support Holley Fuel Controls, 686 ea, exceeds \$250,000, Holley Carburetor Co., Detroit.

Indicator, 530 ea, \$266,808, Sperry Gyroscope Co., Great Neck, N. Y.  
Gyro horizon indicator, 481 ea, \$223,142, Sperry Gyroscope Co., Great Neck, N. Y.  
Instrument test equip, 30 ea, \$63,821, Bendix Aviation Corp., Teterboro, N. J.  
Magnet assy, 492 ea, \$427,570, Bendix Aviation Corp., Sidney, N. Y.

Aeronautical instrument spare parts, var, \$53,287, Kollman Instrument Corp., Wash.  
Maintenance parts, 9300 ea, \$74,386, Bendix Aviation Corp., Teterboro, N. J.  
Radar bench assy, 303 ea, exceeds \$250,000, Metalcraft Mfg. & Sales Corp., Kansas City.  
Maintenance parts used on carburetors, 2660 ea, exceeds \$250,000, Niles-Bement-Pond Co., West Hartford, Conn.

Brake & wheel assys, 294 ea, \$81,150, The Goodyear Tire & Rubber Co., Akron.  
Maintenance parts for PB1W aircraft, var, \$65,527, Boeing Airplane Co., Seattle.  
Crankshaft assys, 262 ea, exceeds \$250,000, Canadian Commercial Corp., Wash.

Initiator Burst, M1 75MM Rifle, 6110 unt, \$136,375, Wright Machine Co., Worcester, Mass.  
Spare parts for materials handling equip, \$26,162, Towmotor Corp., Cleveland.  
Spare parts for materials handling equip, \$40,028, Chrysler Corp., Detroit.

Spare parts for materials handling equip, \$54,510, Towmotor Corp., Cleveland.  
Cartridge, grenade, rifle, exceeds \$250,000, Remington Arms Co., Inc., Bridgeport, Conn.  
Cases, cartridge, brass, exceeds \$250,000, Stoner Mfg. Corp., Aurora, Ill.  
Fin assys, \$26,140, Norris-Thermador Corp., Vernon, Cal.

Parts for shotgun, 5000, \$43,335, Remington Arms, Bridgeport, Conn.  
Tools, link metallic belt, var, \$207,759, Autotype, Oakville, Conn.

Cartridge, cal .30, 18000000 rds, exceeds \$250,000, Remington Arms Co., Bridgeport, Conn.

Cartridge ball, carbine cal .30, 7000000 rds, exceeds \$250,000, Winchester Repeating Arms, New Haven, Conn.

Primer percussion, 465500 ea, \$192,670, Eagle Lock, Conn.  
Fuse, grenade, hand striker assy & spring, 2790000, \$80,910, Humason Mfg. Co., Forrestville, Conn.

Booster, smoke canister, 62000, \$31,166, Brass Good Mfg Co., Deep River, Conn.  
Booster, 300000, exceeds \$250,000, Bruner-Ritter, Inc., Bridgeport, Conn.

Fuse, P. D. M82A1, metal parts, 420000 ea, exceeds \$250,000, The Cincinnati Advt. Products, Cincinnati.

Periscopes, T35, 1507 ea, exceeds \$250,000, Herschede Hall Clock Co., Cincinnati.  
Extra heads, 1370 ea, exceeds \$250,000,

# Need Conveyor Chain? NOW

We're In Position To Make

## IMMEDIATE DELIVERY

### X458 Drop-Forged

## Rivetless CONVEYOR CHAIN



Improved production and material conditions have enabled Jervis B. Webb Company to stock an adequate supply of X458 Chain—ready for immediate delivery—to meet your conveyor system needs.

The No. X458 Drop-Forged Rivetless Chain for Trolley Conveyors (illustrated above) has the improved webbed side link which substantially stiffens it. Also, this type link prevents telescoping of the chain while in service. Simple and strong, it is cheaper and lighter per unit of ultimate strength than any other type of conveyor chain. It can be installed or removed by unskilled labor. Having no rivets, welds or bolts, X458 Chain requires no special or joining links and may be disconnected at any point, yet it is so designed that it cannot become disconnected while in service. No. X458 Chain is completely interchangeable with the Webb FIRST—the original No. 458 Chain designed in the early Twenties by Mr. Jervis B. Webb.

Send us your specifications and requirements. Prompt reply promised.

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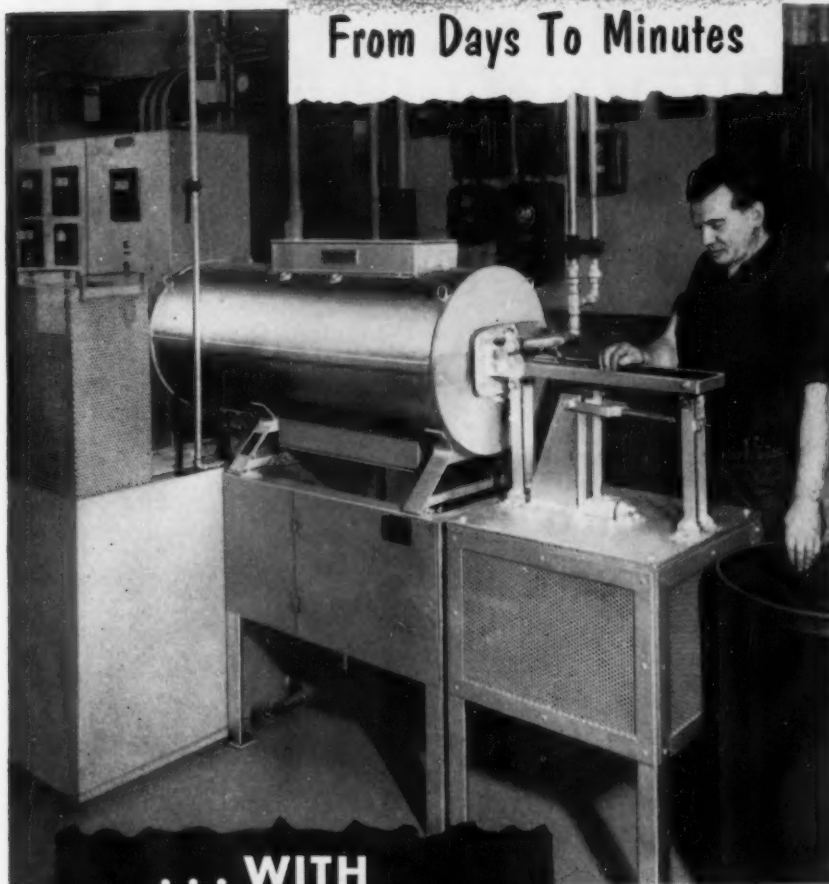
## COMPANY

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**FACTORIES IN DETROIT . . . LOS ANGELES . . . HAMILTON, ONT.**



## Hardening Time Cut From Days To Minutes



**... WITH  
HEVI DUTY  
SHAKER HEARTH  
FURNACE**

## Master Lock Company

### SPEEDS PRODUCTION WITH THIS NEW FURNACE

Heat treating of an 80 pound batch of small springs required two days when hardening in charcoal filled containers. This process was not only slow but also costly due to a high percentage of rejects.

Now in a Hevi Duty Shaker Hearth Furnace, a similar batch is "bright" hardened in 75 minutes. Each spring receives uniform heat treatment without distortion thus cutting production costs. This furnace has been designed to solve your problem of heat treating small parts.

**HEVI DUTY**

Learn more about this modern production tool and the way it can help you.  
WRITE FOR BULLETIN HD-850.

**HEVI DUTY ELECTRIC COMPANY**

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces... Electric Exclusively  
Dry Type Transformers Constant Current Regulators



## Construction

### Steel Inquiries and Awards

Fabricated steel awards this week include the following:

- 3300 Tons, Boston, Mass., structural carbon and structural silicon steel, furnishing erecting and painting steel superstructure of Boston Expressway. Awarded Grosser and Shlager Iron Works, Somerville.
- 1660 Tons, Tobyhanna, Pa., Tobyhanna Signal Depot. Merritt, Chapman & Scott, New York, general contractors.
- 690 Tons, Crane, Ind., Naval Ammunition Depot, to Mesker Co.
- 550 Tons, Chanute Field, Ill., Army Engineers Warehouse, Johnson, Drake and Piper.
- 550 Tons, Decatur, Ill., Maintenance Repair Shop, to James Leck and Co.
- 370 Tons, Philadelphia, Bldg. No. 44, Frankford Arsenal, to Bethlehem Fabricators.
- 195 Tons, Rusk County, Wis., Bridge to Allied Structural Steel Co.
- 145 Tons, Damariscotta and Newcastle, Maine, structural steel bridge. Low bidder is W. H. Hinman, Inc., North Anson, Me.

Fabricated steel inquiries this week include the following:

- 5140 Tons, Memphis, six permanent warehouses, bids June 4.
- 1000 Tons, Denver Academic Hangar, bids June 18.
- 800 Tons, Birdsboro, Pa., heat treatment building, Valley Forge Associates, bids due June 13.

Reinforcing bar awards this week include the following:

- 250 Tons, New Haven, Ind., Ordnance Plant, to George Sheath Co.

### May Construction Hits New Peak

New construction volume went to a new high mark at the end of May as industrial building passed the \$1 billion mark to bring the overall total so far this year to \$11.9 billion.

May expenditures for new construction amounted to about \$2.8 billion. Largest individual total was credited to home building—\$913 million, not including the \$55 million put into publicly-financed dwellings.

Industrial construction for the month totaled \$188 million exclusive of \$135 million financed by the government and another \$152 million for military facilities.

### DTA Submits Materials Claims

Construction materials claims submitted by Defense Transport Administration for railroads, bus and truck terminals, transit companies, inland waterways, and warehousing, storage and port facilities for fourth quarter use amount to 55,415 tons of structural steel and 2,569,000 lb of copper wire products.



*Mark this down  
in your book...*

## This GENERATOR can save up to 50% of your OXYGEN costs



For Metal  
Production  
and  
Fabricating



For Glass  
Welding and  
Sealing, etc.



For Chemical  
Processing, etc.

WBD 1-4213

### FIRST UNIT OF ITS KIND—A PIONEER

The JOY Oxygen Generator was designed to supply commercial users of oxygen at actual savings up to 50%. It is an *exclusive* Joy development. The Model OX-20, illustrated, is rated to deliver 2000 cu. ft. per hour (about 2 tons per day). The complete line will include units ranging from ½ to 12 tons capacity daily of oxygen at 99.5+ % purity.

### OWN YOUR OWN OXYGEN PLANT

All the advantages of the Joy Generator become *yours*. It is simple to start and operate, can be easily handled by ordinary plant equipment personnel and is completely automatic in operation, requiring only occasional inspection and purity checks. What's more, the unit is *inherently safe*—along with a top operating pressure of only 185 psi, it has pop safety valves and an automatic shut-off system.

### NO MESSY CHEMICALS

Joy "OX" machines are readily adaptable to single or multiple installations; and for feeding plant supply lines, filling cylinders, or both. The only raw material used is *air*, and the units are self-cleaning . . . no messy chemicals to supply, no residue to remove. ● Write us your oxygen requirements . . . Joy Manufacturing Company, Oliver Bldg., Pittsburgh, 22, Pa.

# JOY

SPECIALISTS IN THE COMPRESSION AND  
MOVEMENT OF AIR AND GASES SINCE 1885

# Industrial Briefs

**Anti-Tuberculosis** — PITTSBURGH COKE & CHEMICAL CO., Pittsburgh, is producing isonicotinic acid, from which isonicotinic acid hydrazide, new "miracle drug" weapon against tuberculosis, is made. The company has shipped enough samples of the material to produce 250,000 anti-TB tablets.

**Expansion** — Mechanical Div., ARTHUR D. LITTLE, INC., Cambridge, Mass., will move to a new larger building in the West Cambridge industrial area.

**Leases Plant** — LACLEDE-CHRISTY CO., St. Louis, leased the plant and facilities of Stupp Brothers Bridge & Iron Co., same city. The acquisition of this new plant will substantially double Laclede-Christy Co.'s output of vitreous sewer pipe.

**Branch Warehouse** — A branch warehouse and sales office has been established at 430 South Mill St., Lockland, Cincinnati, to provide better service and deliveries to the Cincinnati industrial area by QUAKER RUBBER CORP., a division of H. K. Porter Co., Inc., Philadelphia.

**Distributor Named** — The RIGIDIZED METALS CORP, Buffalo, has appointed Electric Steel Foundry as their West Coast distributor.

**New Plant** — WESTINGHOUSE ELECTRIC CORP. will build a new multi-million dollar plant at Raleigh, N. C. It will be more than 500,000 sq ft in size and will employ 2500 people.

**Combined** — BALDWIN-LIMA-HAMILTON CORP., Philadelphia, has combined into one internal operating unit the Lima Div. and the Austin-Western Co., a wholly owned subsidiary, as a further step in the consolidation of related product lines. Products of both organizations will continue to be sold under present names and trademarks.

**Warehouse Opened** — CRUCIBLE STEEL CO. OF AMERICA, New York, has opened a new warehouse and branch office at 4920 East Nevada, Detroit. An Open House for customers and friends will be held June 20-21.

**Construction** — APEX SMELTING CO., Chicago, is constructing a commercial pilot plant in the Pacific Northwest. This plant will produce intermediate alloys containing aluminum and silicon, using clay as a raw material.

**Open House** — JONES & LAMSON MACHINE CO. will hold an Open House at their plant, Clinton & Bridge, Springfield, Vermont, on June 21st.

**Cooperation Stressed** — The theme of the seventh annual convention of the INDUSTRIAL DIAMOND ASSN. OF AMERICA, at the Princess Hotel, Bermuda, recently, was the need for cooperation with the United States Government's rearmament program. The industry itself is an important part of the nation's production, producing diamond tools and wheels for many sections of industry, notably, for automotive and other vital defense material.

**Increase Facilities** — LINDBERG ENGINEERING CO., Chicago, has increased their manufacturing facilities with the opening of Lindberg Plant No. 2.

**Centennial of Engineering** — The Mutual Security Agency at Washington has decided to utilize the importance of the CENTENNIAL OF ENGINEERING, scheduled in Chicago this summer, by bringing 200 leading European engineers to the U. S. to study American production methods.



**New Offices** — CONNERS STEEL CO., Birmingham, division of H. K. Porter Co., Inc., has opened sales offices at 1145 Peachtree St., N. E., Atlanta, and 777 Court Ave, Memphis, Tenn., to assist in handling enlarged production.

**Helicopter Plans** — JACOBS AIRCRAFT ENGINE CO., Pottstown, Pa., a subsidiary of Barium Steel Corp., New York, has completed plans for the production of a 5-place helicopter of radically new design and performance.

**Contract Awarded** — Chemical Plants Div., BLAW-KNOX CO., Pittsburgh, has been awarded a contract by the Tennessee Coal & Iron Div., U. S. Steel Co., Fairfield, Ala., for the design, procurement and construction of ammonia unloading facilities.

**Alumni to Gather** — BATTELLE INSTITUTE alumni will assemble at a luncheon on Monday, June 23, at the Hotel Statler, New York.

**Breaks Ground** — A new plant is being constructed by TOPPER EQUIPMENT CO. in Clark Township, Rahway, New Jersey. New plant will be approximately 30,000 sq ft.

**Appointed Representative** — DRAVO CORP., Pittsburgh, Pa., has appointed Harry F. Haldeman, Inc., sales representative on the West Coast for Dravo "Transportainers." Transportainers are welded steel, 275-cu ft containers to protect cargo from pilferage and damage and to simplify cargo handling on piers and ships.

**Tour of Operations** — TOWNSEND CO., welcomed 140 members who attended the annual meeting of Wire Assn. in Pittsburgh recently to their New Brighton plant for a tour of operations.

**Honored** — The late R. I. Ingalls, Sr., chairman of the board, The Ingalls Iron Works Co., Birmingham, was recently honored by one of Alabama's banking institutions. Mr. Ingalls' widow was presented with a handsomely inscribed MEMORIAL by Thomas W. Martin, chairman of the board of the Alabama Power Co., representing the directors of the First National Bank.



# Revere

## Electric Welded Steel Tubes

Hot and Cold Rolled Carbon Steel up to 1025 Carbon

### Round Square Rectangular Special Shapes

Diameters from  $\frac{1}{4}$ " O. D. to  $4\frac{1}{2}$ " O. D.  
Wall thicknesses from .025" to .187"

● If you require Electric Resistance-Welded Steel Tube, we suggest you get in touch with Revere at once. On many requirements, exceptional deliveries can be made. Investigate this source of supply.

Complete facilities are available for further fabrication such as cutting, swaging, bending, annealing, testing, etc.

If you are equipped to do your own fabricating, you will find Revere Electric Welded Steel Tubing has uniform properties and can be readily formed for varied applications.

Over 25 years of experience in the manufacture of Electric Welded Steel Tubes.

Technical and Engineering service is available. Consult us on your Steel Tube problems.

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Founded by Paul Revere in 1801  
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;  
Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—  
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# The Automotive Assembly Line

## Car Output Battle Has Two Fronts

**Supplies, NPA quotas biggest problems for automakers . . .  
If they get one, they don't have the other . . . Ask quotas for  
2.5 million cars in last half of '52—By R. D. Raddant.**

Production generals of the automotive industry will recall 1952 as the year the battle of production was fought on two fronts. As the year heads toward its halfway mark, the outcome is still in doubt.

On one flank, the industry has

build 2,500,000 cars in the last half of this year. Request is over the quarterly allotment of 1,050,000 passenger cars already earmarked for the industry by NPA, but equal to the second quarter allotment.

There is already evidence that

ness to recoup losses in inventories rather than a genuine tight market.

Car manufacturers were caught with supplies of about 3 weeks duration. Some production could be stretched out. But with pipelines emptied, even an early return of steel production would leave a permanent gap in the lines.

Irony is that this serious threat came at a time when the industry was congratulating itself on a return of an aggressive market. Beset by frigid demand in the first 5 months of the year, the last 30 days saw a marked improvement in the market.

**Exports**—Direction of automotive exports has shown a decided Latin American inclination in the postwar market.

While exports of American automobiles are still far below prewar years, the rate is climbing back to former figures. Most encouraging aspect of the foreign market is the emergence of Latin American countries as the major overseas market.

Figures compiled by the Automobile Manufacturers Assn. show that in 1951 the 33 countries of Central and South America accounted for 253,061, or 58 pct of the 434,659 motor vehicles shipped out of the United States.

**Take Most**—Bulk of the foreign market was absorbed by Brazil, Mexico, Venezuela and Cuba which together received 42 pct of all trucks, buses and cars shipped from the U. S. in 1951. Before World War II they received only 12.5 pct.

Before the war, Europe and the Far East were the principal importers of American vehicles.

In total exports, postwar years have lagged behind the prewar market. Formerly about 10 pct of U. S. output went out of the country. Only about one of every 15 vehicles produced in the past 6 years has gone overseas.

Exports hit a low of only 3.8

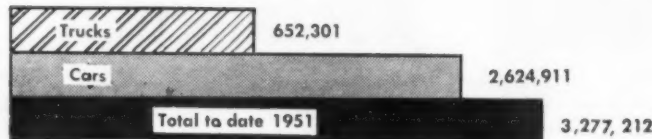
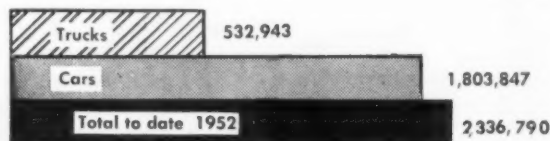
### Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS	TOTAL
June 7, 1952	102,434*	28,975*	131,409*
May 31, 1952	80,953	23,939	104,892
June 9, 1951	120,318	32,338	152,656
June 2, 1951	91,707	29,769	121,476

\*Estimated

Source: Ward's Reports



battled against steady and only slightly yielding pressures of National Production Administration production quotas.

On the opposite flank, the industry has already survived two supply threats brought on by strikes in the steel industry. The third strike found auto supplies already seriously depleted by the two previous shutdowns.

**Ask More**—Last week, in a parley with NPA officials, the auto industry asked for permission to

the request for a quota boost will be partly successful. NPA's Motor Vehicle Div. has indicated it favors increases to meet production of 1,150,000 cars. Final decision rests with Defense Production Administration.

**Optimistic**—Setting aside the strike issue momentarily, auto makers think the materials would be available, if they only had the tickets. This tends to support the theory that the recent tightness in steel market stemmed from eager-

pct in 1950, climbed to 7 pct in 1951, and appeared headed for 8 pct for 1952 on the basis of first quarter figures.

**Average**—Credit for the neatest automotive idea for the week goes to Ford Motor Co.—creation of the average man.

And he has an average job, Ford men boast—just sitting around.

He is an engineering staff creature, a unique plastic dummy. He is built strictly in accord with the Army's World War II average physical standards.

Just for the record, he weighs a shade over 164 lb, stands 5 ft 9 in. in height. He will be used in designing and testing Ford's automobile seats, arm rests, and vehicle head and leg room.

Parke Hanner, Ford engineering staff clay modeler, designed the dummy. To date he has not been named—anything printable, that is.

## K-F Splits Car-Plane Operation

Kaiser-Frazer Corp., which is turning out both cars and planes at the mammoth Willow Run plant, has decided to split the operations into separate automobile and airplane divisions.

T. A. Bedford will be in charge of the auto division, and will also have aircraft engine production under his jurisdiction. Airplane and airframe divisions will be under S. A. Girard, vice-president and general manager of the aircraft division.

K-F is producing cars and the Fairchild C-119 and Wright R-1300 planes and engines in Michigan. Component parts for the Boeing B-4XX 52 and Lockheed P2V bombers in plants at Oakland and Richmond, Calif.

## Body Assembly Moved to Coast

Chrysler Corp. will bring its first passenger car body assembly operations to the West Coast in its dual purpose civilian-defense plant at San Leandro, Calif.

Part of the plant is now being developed for production of Hamilton standard propellers for the Navy and Air Force.

## Aluminum:

**New alloy brazing sheet for use in auto radiators developed by Alcoa.**

New aluminum alloy brazing sheet for use in automotive radiator development work has been produced by Aluminum Co. of America. Called No. XA30 Brazing sheet, the new product has core metal of 3S

See p. 73 for story on SAE's Atlantic City meeting.

alloy. One side of the core metal is clad with C43S brazing alloy to assure good joints, and the other side has an alclad coating.

Copper saving made possible if aluminum becomes standard auto radiator material would range between 100 to 125 million lb yearly. The 5 million automobile radiators produced each year take 20 to 25 lb of copper each.

**Dip Brazing**—Alcoa believes dip brazing is the best method of producing radiator cores. By using this joining process, controlled temperatures in the brazing range are

assured and a separate fluxing operation is eliminated.

The brazing process requires a degreasing operation with trichloreethylene, carbon tetrachloride or similar solvents. After cleaning, the assembly is preheated to 950 to 1000°F. Unit is then dipped into molten flux at brazing temperatures ranging between 1120 and 1140°F.

After joining is completed, an operator removes the assembly from the furnace and drains the residual flux. As soon as air cooling permits, the unit is given a hot water rinse followed by immersion in a nitric acid cleaning solution and a final cold water rinse.

Tests made on No. XA30 Brazing Sheet show corrosion caused by several different coolant mediums was not critical. Problems still facing Alcoa engineers before aluminum can be accepted as standard radiator material: Will an inhibitor with coolant waters of different areas be necessary? Will an exterior paint coating be needed to protect the radiator?

## THE BULL OF THE WOODS

By J. R. Williams





# ASSURE YOUR GEARS A "RIPE OLD AGE"



... with **TEXACO**  
**MEROPA LUBRICANT**

When you use *Texaco Meropa Lubricant* in your enclosed reduction gears, you'll get long-lasting protection that adds immeasurably to gear life. *Texaco Meropa Lubricant* stands up under the toughest conditions.

*Texaco Meropa Lubricant* also rates tops for resistance to oxidation. It does not thicken, does not foam, does not separate in service, storage or centrifuging. And the fact that it protects bearings as well as gear teeth means lower maintenance costs.

For oil film bearings in roll necks, use *Texaco*

*Regal Oil* and watch your maintenance costs come down. This turbine-quality oil is especially designed for heavy duty and has outstanding resistance to oxidation and sludging.

For greater efficiency and lower costs throughout your mill, call in a Texaco Lubrication Engineer. Just contact the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

**TEXACO Meropa Lubricants**  
FOR STEEL MILL GEAR DRIVES



### Senate Must Argue Strike Over Again

**After putting plans to get steel pouring again in storage Senate learns of stalemated negotiations . . . Must thrash out problem again . . . Three plans suggested last week.**

Last week the Senate was bumping heads in haste to act on the steel industry shutdown. It depended on what side of the party fence you were on when it came to picking between Congressionally authorized seizure or use of the Taft-Hartley Act.

But Senate action was pulled into abeyance when it was announced that steel industry and United Steel Workers negotiators were plying their trade in earnest. The Senate sat back and wished for an early settlement. When negotiations reached a stalemate last Monday, it was certain the Senate would again start arguing on how to get steelmaking started again.

A maneuver was uncorked in the Senate last week to drop the authorized seizure issue in favor of using the Taft-Hartley Act to get workers back to the plant.

**Three Tactics** — Actually, the Senate was confronted last week with three principal proposals, all leading to a quick resumption of steel production. Most Southern Democrats favored a plan backed by Senator Maybank, D., S. C., setting up a Steel Emergency Wage and Price Board to settle the strike. Truman Democrats favored specific and direct seizure.

Republicans generally agreed with Senator Taft, R., O., that there was no point in talking about re-seizure until the White House has used Taft-Hartley.

Sen. Maybank's proposal permits the White House to seize plants if either labor or management refuse to accept Wage Stabilization Board recommendations. And there would be a maximum ban of 120 days on strikes before seizure.

**Order Pooling**—There's a new move on foot to bring about workable pooling of defense orders among smaller manufacturers.

Small business production pools were both numerous and effective during World War II. But in the present war they've been almost a complete bust, chiefly because of hamstringing government restrictions. The naturally competitive suspicion with which many manufacturers view each other in pooling operations hasn't helped either.

New move is being pushed by the Senate Small Business Committee and Small Defense Plants Administration to get more defense work for smaller firms.

**No Interest**—SDPA in particular has been assailing the Army and Navy recently for their "in-

excusable" failure to draw more firms into defense work.

Senate committee members are urging procurement officers to rate small defense production pools as "small business" even though employees may total over 500—the historic Washington dividing line between "big business" and "small business."

The committee also asks that prime contractors be told of the availability of production pools for subcontracting. There's also a move on against red tape.

**No Genuine Needs** — Election-year caution of both political parties is slowly forcing Congress to approve an 8- or 9-month extension on price controls. But it's conceded by some key members of both parties that there is no real economic justification for their continuance.

Democrats feel that an active price-control machine, even one which makes a lot of noise but doesn't produce much, is a sure-fire election gimmick.

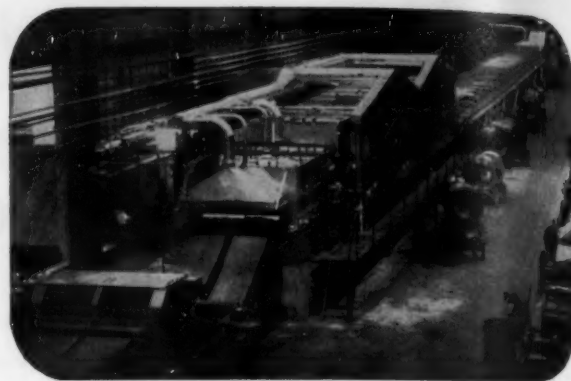
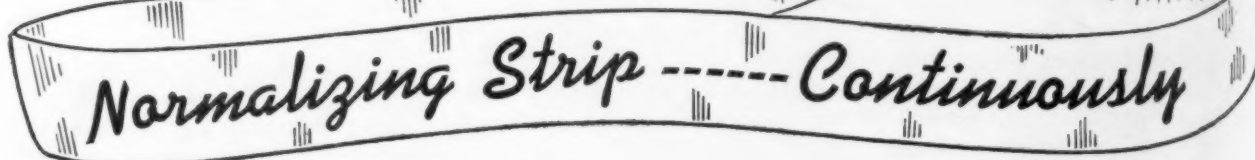
Republicans would like to feel that if Congress voted down price controls, the Administration would conscientiously set to work fighting inflation with the tools already at its disposal (authority to raise interest rates, for example). But they fear the Administration may push prices up just before elections.

**Stockpile Water Pipe**—Civil Defense authorities soon will start stockpiling 8-in. water pipe, together with the necessary pumps and couplings, in selected target areas around the country.

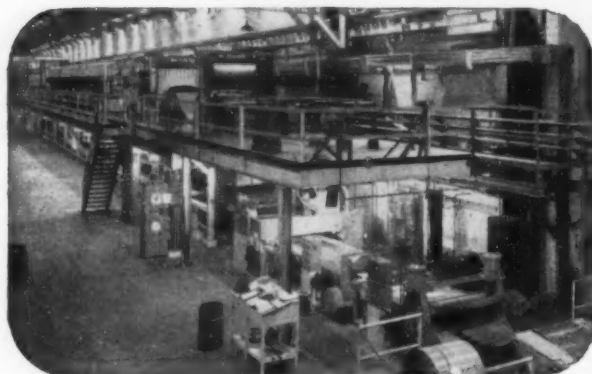
Present plans call for storage of about 450 miles of this 12-gage pipe and the related equipment to the unnamed "critical areas" by the end of this year.

While officials will not say so publicly, it is understood that quite a few of the storage sites will be located in the Detroit-Cleveland-Pittsburgh belt.

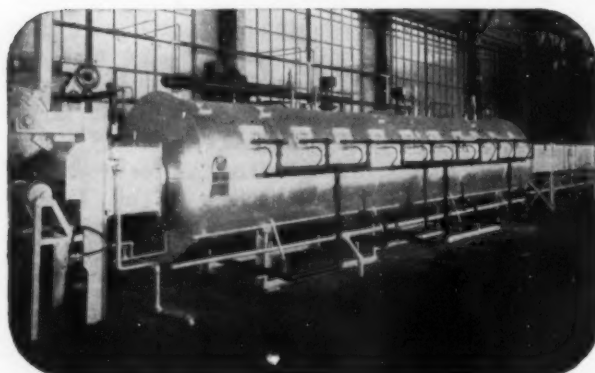




Strip in single or multiple strands up to a total width of 54" may be bright annealed or normalized, continuously, in this EF gas fired radiant tube installation. Capacity 7200 lbs. per hour.



A large capacity continuous strip normalizing, annealing and galvanizing unit. This is a combination EF gas fired radiant tube and electrically heated installation and is over 400 feet long.



Stainless steel strip is bright or process annealed, continuously, in this EF gas fired special atmosphere tube muffle type furnace. It also handles other strip requiring lower temperatures.

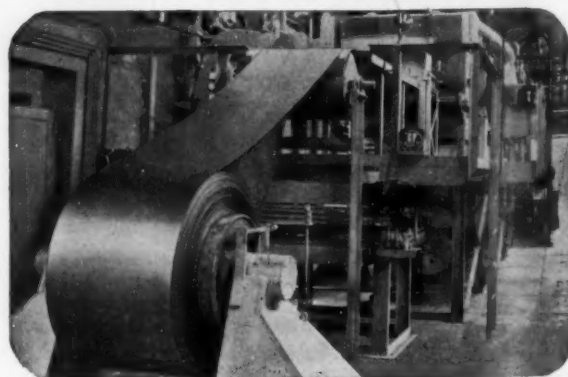
We are in position to design, build and put in operation: continuous strip lines for hot or cold rolled, high or low carbon, stainless, silicon, tinplate, aluminum, brass, bronze or any other ferrous or non-ferrous strip—for bright annealing, normalizing, galvanizing, aluminizing, tinning or any other process—in the size and type best suited to your plant, process, product or production requirements. No job is too large or too unusual.

Put your production furnace problems up to experienced engineers—it pays.

**THE ELECTRIC FURNACE CO.**  
Salem • Ohio



Gas Fired, Oil Fired and Electric Furnaces



An EF special atmosphere furnace with flame preheating burn-off or oxidizing section, and controlled heating and cooling zones for producing various surface conditions on strip.



## COPPER: Curb on IMC control Sought

**Ferguson Amendment exempts U. S. copper purchases from world allocations . . . Proponents claim IMC restrictions make copper stockpiling impossible . . . DPA chief cites shortage.**

In a close 43-40 vote, the Senate last week inserted an amendment into the Defense Production Act, now being considered for extension, which would limit U. S. participation in international allocations of critical materials and minerals. Specifically the amendment seeks to pry copper loose from jurisdiction of the International Materials Conference. It would exempt American purchasers from any restrictions on imports of critical materials, providing domestic production is sufficient to satisfy defense, stockpile and military assistance needs.

A group of Senators, led by Homer Ferguson (R., Mich.), attacked IMC as a raw materials cartel. They argued that the U. S. gets less copper than it received in 1950, before the IMC was organized, and that international limitations made stockpiling of critical materials such as copper and nickel impossible.

**Import Price**—However, an even greater limitation on copper imports has been the Office of Price Stabilization's import copper price ceiling of 27½¢. Foreign prices have been considerably higher than this figure, and American manufacturers have been unable to buy up to the amounts of copper allocated by IMC. OPS has changed tack recently, making it possible for copper consumers to buy foreign copper at going prices and charge 80 pct of the increased costs to their customers.

The Ferguson Amendment to limit IMC power strikes close to the total structure of the Controlled Materials Plan and was fought bitterly by Administration leaders. Defense Production Administrator Henry Fowler stated the amendment would increase copper prices substantially and

create a world shortage except for the highest bidder.

He claimed U. S. copper production is considerably below 4th quarter requirements for military, atomic energy, and defense supporting and construction programs estimated at 1,180,000,000 lb. Of this amount military and atomic energy program will need 37 million lb, defense supporting requirements, 636 million lb, and 106 million lb for maintenance, repair and operating supplies, stated Mr. Fowler.

**Wreck CMP**—Prospects of domestic supplies for the quarter total about 1,100,000,000 or 80 million tons less than required for essential needs. The DPA boss added that his estimate did not include copper needed for stockpiling, self-certifying small users, school, hospital or commercial construction, public and private housing, or motor vehicle production.

The amendment would not only create a world copper shortage, but would make the CMP program inoperative, Mr. Fowler believes. Only alternative for the DPA and

NPA, he asserted, would be to take domestic copper away from the civilian economy or else deprive the defense program.

DPA chief does not believe scrapping of CMP would mean an end to the controls system, but he does not think any subsequent program would work as well. The Small Defense Plants Administration joined Mr. Fowler in opposition to the Ferguson Amendment and added that "orderly easing of controls on copper and other critical materials can take place only if existing legislation is preserved."

### Congress to Curtail WSB Powers

Sound trouncing (56-26 vote) delivered last week to a Senate proposal to let the Wage Stabilization Board continue in business on an "as is" basis shows clearly the current bipartisan intent in Congress to build new wage board machinery strictly confined to the handling of wage matters.

This much, at least, is crystal-clear this week, although the exact form and character of the successor board to WSB has yet to be finally determined. But there's an overwhelming belief in both houses of Congress that the steel shutdowns would never have occurred if the WSB had confined itself in the steel dispute to wage matters only.

It is generally agreed that Congress had no intention, when it drafted the present Defense Production Act a year ago, of permitting the WSB to meddle in such issues as the union shop, which it recommended for the steel industry.

A check of House Labor Committee opinion shows that the lower chamber can be expected to endorse legislation providing for a new WSB with sharply-curtailed functions, and requiring Senate confirmation for all public members of the board. In the case of industry and labor members, White House appointment alone would suffice.

In the Senate, present plans call for similar limitations on the new board's authority, and for Senate confirmation of all board members—industry and labor members as well as public members.



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## **MicroRold**<sup>®</sup> STAINLESS STEEL

When you order sheet by gauge number the permissible A. I. S. I. variation in thickness is plus or minus 10%. Thusly, if you order 18 gauge, you may receive a sheet .052 thick when .0475 would suit your purpose. Using a standard 18 gauge 36"x120" sheet as an example, the theoretical weight is 63 pounds, but this weight could permissibly vary between 65.52 pounds and 59.22 pounds.

A sheet of MicroRold .0475 thick with a tolerance of only 3% would weigh 59.85 pounds thus insuring a saving of 3.15 pounds from the theoretical average-weight, or 5.67 pounds from the maximum, while still remaining within the 18 gauge ordering range.

Weight of One Sheet  
of 18 Gauge 36" x 120"  
Plus or Minus 10%

.052"—65.52 Pounds
.051"—64.26 Pounds
.050"—63.00 Pounds
.049"—61.74 Pounds
.048"—60.48 Pounds
.047"—59.22 Pounds

Theoretical Wt.  
63.00 Pounds

Weight of the same size sheet of .0475 plus or minus 3% is 59.85 pounds with an average saving of 3.15 pounds per sheet.

Multiply this saving by the number of sheets you use per month and the price per pound and you have a good dollar and cents reason for buying MicroRold.

\* Each additional 1/1000" of thickness adds 1.26 pounds weight per sheet.



**WASHINGTON STEEL CORPORATION**  
WASHINGTON, PENNSYLVANIA



## West Coast Report

### Strike Closes Down Western Steel

**Area loses over 55,000 tons of steel ingots in first week of shutdown . . . Most plants closed . . . Walkout orderly, with maintenance crews on job . . . 15,000 idled—By T. M. Rohan.**

Over 55,000 tons of ingots were lost in the West during the first week of the steel strike, an IRON AGE regional survey showed.

At this column's deadline the strike was moving into its second week. Negotiations collapsed last Monday and only Kaiser and some small producers were operating.

Walkouts had been orderly, with maintenance crews on the job. Only at the Pittsburg, Calif., plant of U. S. Steel was there a brief flurry at the end of last week when pickets tried to bar the plant superintendent from entering. An estimated 15,000 were out of work in the West due to the strike.

Plants still operating, with or without contracts, were going full blast. Most were receiving scrap offers from smaller dealers. Prices remained firm.

**New Mill**—Seidelhuber Steel Rolling Mills of Seattle at week's end revealed it had purchased a 10-in. rolling mill and complete machine shop facilities of Heller Brothers, Newark, N. J., file and tool makers. Operations were slated to start at the Seattle mill by Aug. 15.

The equipment, bought "in less than 30 minutes after seeing it," was evaluated at "over \$1½ million" by Frank Seidelhuber, Jr., president of the firm. He said he paid "less than \$500,000" for it. He added the entire project is privately financed although a Reconstruction Finance Corp. loan of \$960,000 is pending for installation and buildings for a larger 24-in. mill currently being erected.

**Facilities**—Equipment purchased consists of a 7-stand 10-in. hot bar mill with 16 and 14-in.

roughing stands, three heating and two annealing furnaces, 410 sets of rolls and a complete machine shop including shears, trolleys, cranes and lathes.

Production has already been sold out until December 31. Finished products will include 5/16 to 2½-in. reinforcing bars, octagons, hexagons and squares.

Major customers are manufacturers and building contractors within a 100-mile radius who will use reinforcing bars on Grand Coulee Dam and other projects in Portland, Ore., Vancouver, B. C., and Alaska.

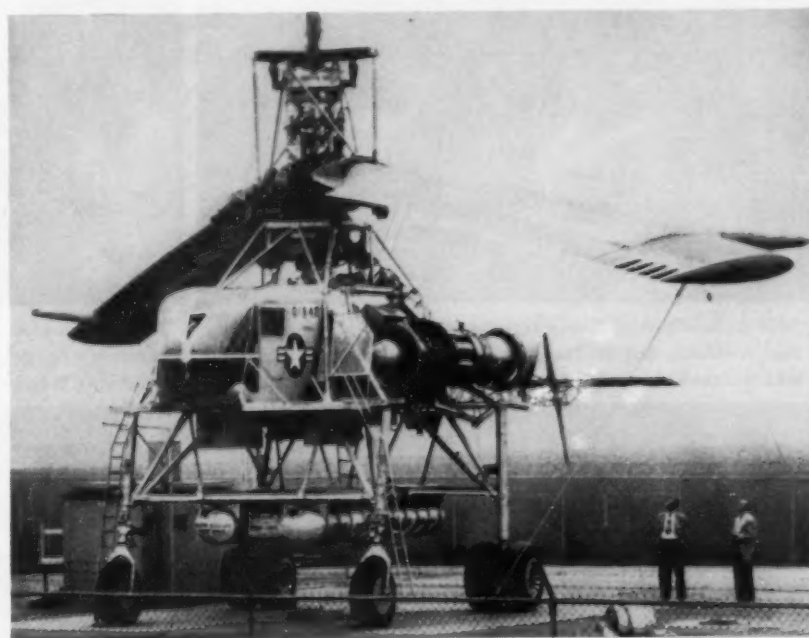
Present electric furnace has a capacity of 5000 to 6000 tons per month of low carbon rating bars and about 3000 tons per month of

angles. It is a 25-ton unit but has consistently put out 30 tons on a 3 to 4-hr cycle, says Seidelhuber.

Although in the past he has found it necessary to sell ingots to England, Seidelhuber said the order for 10,000 tons has been completed and all other commitments will be cleaned up in 2 months so stockpiling can begin.

**New Warehouse**—Republic Supply Co. of California last week showed off its new 80,000-sq-ft office and warehouse at San Leandro, Calif., 15 miles east of San Francisco. The Los Angeles firm was host to 2500 at the new plant situated close to the new East Shore freeway for fast truck transport. Over 80 lines are carried, mainly pipe, machinery.

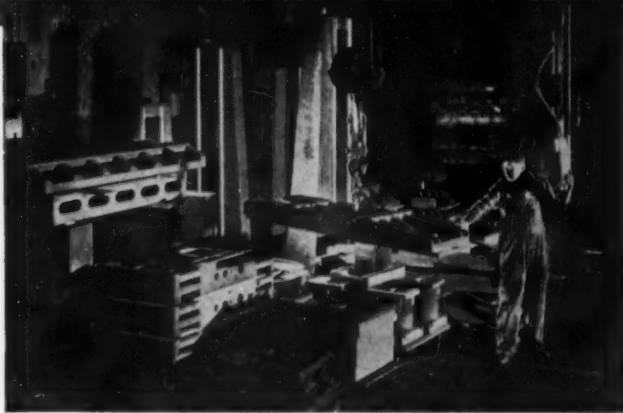
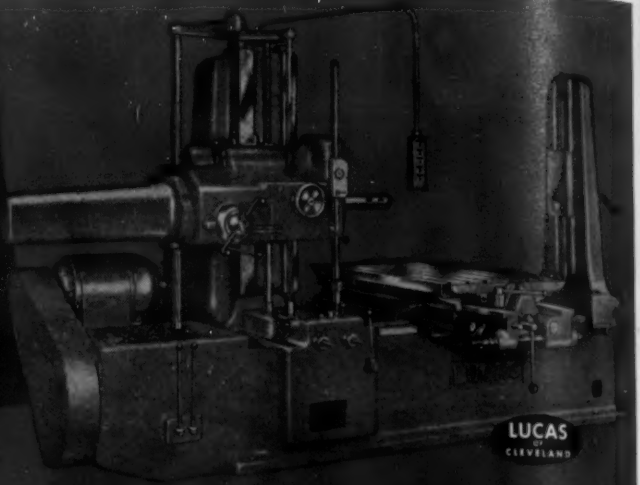
**Paleface** — Anaconda Copper Mining Co. has completed a 10-year lease with the U. S. Indian Bureau under which the firm will mine uranium on 800 acres at Laguna Pueblo near Albuquerque.



**JET:** Said to be the world's largest helicopter, this jet-powered XH-17 is readied for tests at the Howard Hughes Aircraft Co. The Culver City, Calif., company built the machine for the Air Force for short-range moving of heavy military equipment.



"Where's the  
**LUCAS**  
we need so badly?"



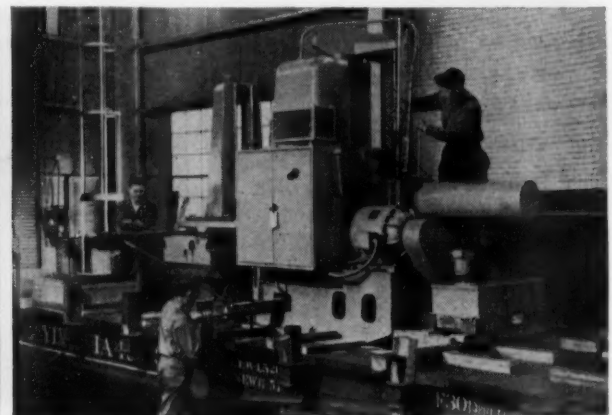
The ultra modern Lucas plant is being used to full capacity with work in process and rough castings waiting to be machined.



Lucas machines at work making components for more Lucas machines, in our plant and in the shops of many outside suppliers.

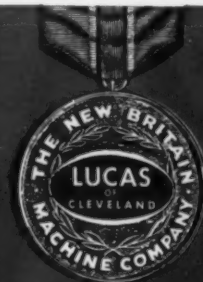


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# Machine Tool High Spots

## NPA Launches Idle Tool Search

**Initiates vigorous program to force usable machine tools into production . . . Ownership confusion creates a problem . . . Misuse of government-lent tools cited—By G. Elwers.**

Recent transfer to National Production Authority of control over government-owned idle machine tools emphasizes belief that there are still many such tools available.

When IRON AGE surveyed the situation a few months ago, the military services and General Services Administration indicated most of their reserves were in productive use and the rest were going fast. But the truth is the government doesn't know how many machine tools it has, where they are, or whether they are in use or capable of being used.

**Sweeping Authority**—NPA is initiating vigorous action to get every usable tool into production. It has asked the machine tool industry to supply teams of experts to scour the nation for unused government-owned tools.

The agency has been given authority to place any government-owned tool in use wherever need arises.

It also has started a survey of stocks of used machinery dealers and distributors of foreign machine tools. And it has the authority to prevent sale of any of these tools until they have been looked over by defense contractors who might need them.

**Tool Hunt**—An expanding program has been started to recover machine tools lent or given by the government to educational institutions.

Present plans are not to take back any tools which are actually being used to train engineers or machinists. But there is plenty of evidence that many of these machine tools are not being used for educational purposes nor for anything else.

A few horrible examples were brought out in recent testimony before a subcommittee of the Senate Small Business Committee. One small shop owner told of his need for a lathe and a grinding machine, both of which he located at a nearby technical high school. The equipment was sitting in a shed, unused and unlikely to be used. The school board wouldn't let this shop, which had government defense contracts to employ the tools, buy or lease the unused machines.

**On the Skids**—Another contractor testified that after much searching and negotiation, he managed to lease a badly needed surface grinder from a local board of education. While carting it away he couldn't help noticing that the storage area was filled with many high precision, high production machine tools. Since such tools could hardly be used in training beginners, they were of no value

to the school. Yet, there they sat, still on the skids on which the government shipped them.

Representatives of one school testified they accepted government equipment knowing it couldn't be used in training operators. The school resold much of this at considerable profit. The rest was retained for "educational" use.

How are they used in education if they can't be used to train operators? Well, according to the testimony, the instructor shows students the machines and points out what they are for and how they work. A photo or a pictorial breakdown of the machine tool could have served for this purpose just as well.

**Recovery Difficult**—Red tape has made it difficult to recover machines from schools. The government was so anxious to get rid of machine tools after the war that it practically forced them on schools. Some were given outright. Some were sold at 5¢ on the dollar with restrictions on resale by the school. Others were loaned, on terms not quite clear to anyone today.

Many schools are not sure if they have the right to lease or sell machines to defense contractors. And in some cases the government isn't sure exactly how to go about recovering them.

**Title Determination**—Federal Security Agency has set up procedures for determining title to machines held by schools. But it has limited funds and manpower, and its search cannot be made too extensive.

Many schools, the FSA reports, are gladly giving up equipment to the government for nominal payments to cover out-of-pocket expenses.

New names on Washington's production equipment commission are the Navy's retired Admiral Blandy, and Army's retired Gen. Lutes. One more is to be named.



### Machinery Featured at Trade Fair

**Toolbuilders take spotlight at Toronto show . . . Canadians have largest exhibit, with Germans next . . . U. S. exhibits minor . . . Quick deliveries promised—By F. Sanderson.**

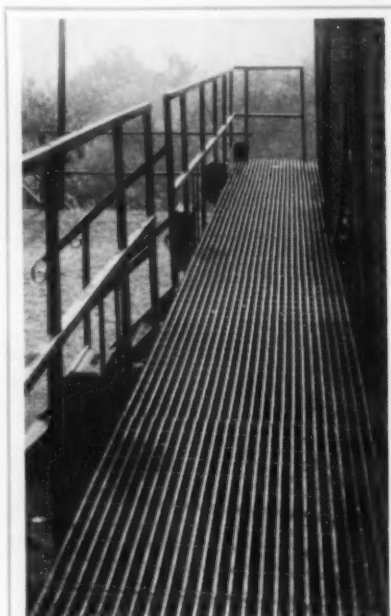
The Canadian International Trade Fair, Toronto (June 2-13), was the center of attraction for industrial interests from practically all countries of the world. While materials and goods of almost every variety were on display, it was machinery and machine tools that held the spotlight.

While Canadian machine toolbuilders dominated the show from the standpoint of space, the United States, France, Sweden, Holland, Belgium, and Germany were well represented. Germany, a newcomer to the Trade Fair, held second place with regard to space and numbers of tools displayed, while the U. S. has only minor representation. This was resented by some Canadians, who fail to realize that American toolbuilders don't exhibit because government restrictions prevent most sales in the Canadian market.

**Deliveries**—American builders are making some sales, but British, German and French makers seem to have gathered most of the orders available at the Fair and some of these ran to substantial volume. One feature of this year's Fair is that many displays carry signs "immediate delivery," whereas last year delivery dates on U. S. tools extended from 6 months to a year and a half and European deliveries from 6 weeks to 3 months. The German group reports delivery from stock on small numbers of machine tools and on large quantities within 3 months.

British industry was not so well represented this year, but we are informed that curtailment is temporary. Robert W. Asquith, president of the Machine Tool Traders Assn. of Great Britain, gave assur-

ance of the continued interest of the British machine tool industry in the Canadian market. He explained that his group is planning participation on a much broader scale in future years.



**SAFETY:** Dominion Bridge Co., Ltd., unveiled its new aluminum safety grating at the Canadian International Trade Fair last week.

Orders placed by Canadians for British machine tools in 1951 had a total value of \$12,729,000 against \$1,400,000 in 1949. For woodworking tools the total was \$983,000 in 1951 against \$87,000 in 1949.

**Biggest**—The biggest piece of equipment ever shown at any Canadian trade fair is on display under the classification of engineering and plant equipment. It is a giant excavator weighing 112 tons with shovel capacity of 3½ cu yds, for

heavy road building or open-pit mining.

A German multi-purpose machine on display will perform 11 different operations at any angle with maximum precision. This machine is equipped for handle turning, drilling, milling, jig boring, reaming, slotting, planing, cutting, grinding, sharp grinding and gear cutting.

A universal grinder featuring central controls, automatic feed mechanism and automatic lubrication is on display. Other displays feature welding equipment, equipment for lifting, transporting and moving of all kinds of materials. Hand tools on display cover everything from saws and scissors to garden tools, and everything needed in a machine shop.

**Controls**—Canada has revoked control orders on lead, zinc and cadmium. The orders covering primary and secondary refined lead, slab zinc and cadmium were put into effect July 1, 1951, when these metals were in short supply and the system was to regulate the rate of metal consumption for commercial purposes and to prevent accumulation of abnormally high inventories.

Action taken here follows the line of decontrol measures in the United States. It is no longer necessary for consumers of these metals to submit purchase orders to the Non-Ferrous Metals Div. for approval before obtaining their requirements.

**Eased Credit**—Cold-rolled steel is reported in good supply while hot-rolled bars, angles, plate and some sizes of pipe are tight with no indication of early easing.

Easing of credit curbs has brought some new life to consumer buying and with price slashing retail inventories have been reduced on a number of lines. It's now hoped that production can be increased to offset any possible sag in steel demand.



# STEEL: Schuman Plan Starts Slowly

**Individual sales organizations still function . . . Competition keen since end of sellers' market . . . French, German producers fear outside price cuts . . . Britain very active.**

Much fanfare by all concerned accompanied the recent ratification of the Schuman Plan. Some hailed the establishment of a joint sales organization for steel and coal from France, Germany, the Saar and Benelux countries as an economic panacea for West Europe.

But so far nothing has happened. The whole situation remains confused. Everybody favored the scheme as long as the sellers' market lasted. Now that it's a buyers' market, obstacles spring up on all sides.

None of the important sales organizations has been dissolved. DAVUM (for French producers) and MONTAN for the Germans are still flourishing. Competition is very keen.

**Exports Off**—Export figures are dropping sharply. Wire mill products are about 40 pct of last year's figures, structurals 60 pct, tubes 80 pct, plates, sheets 65 pct, etc.

Prices are maintained officially, but price cutting is frequent. Steel strikes in America have so far had no effect on prices or selling organizations. But a long strike might open a temporary U. S. market. This could have a price-stiffening effect on European steel, but it would be slight.

Some French and German producers fear foreign competition under the bureaucratic, slow-moving Schuman organization. Italy, Sweden, Czechoslovakia, Poland (of which nobody thought when the plan was drawn up), and of course Great Britain are all now in the market. The British in particular are keener competitors every day. They have already outsold the Continent in ship plates, hoops, cast iron and tinplates.

**Hunt Customers**—With Australia, New Zealand and South Africa

cutting imports, British steel mills are seeking business in the Near East, Latin America, Scandinavia and the Iberian Peninsula. A number of British producers have already signed agreements with Spanish importers at much more favorable terms than those of Schuman Plan countries. Spain permits duty-and-license-free imports for a number of new industries. Bartering "outside trade agreements" is also permitted.

British blackplate has been sold in Israel, Pakistan and the Belgian Congo below Continental quotations. Schuman Plan producers complain Britain and other outsiders with individual sales organizations can meet competitive prices faster.

**In No Hurry**—All member companies are anxious to see the working of the combine postponed as long as possible. IRON AGE European correspondents last week reported all preparations at a standstill.

One of the conditions under which the Schuman Plan organization was formed was the breaking up of German vertical production cartels into independent com-

panies. Interference by the German Trade Unions (Gewerkschaften) has so far made this virtually impossible. The steel industrialists, previously opposed to union influence, now find it a handy catspaw.

One source reports that final working of the Schuman Plan may be delayed until after establishment of a European Army. And many steelmakers in Europe are very skeptical of this scheme. In some quarters there is a lack of confidence in NATO.

## Expansion:

**Franco-American financing underwrites new Sollac hot strip mill.**

A new 1 million ton continuous hot strip mill now under construction in France is scheduled to start rolling this fall and by next spring all of SOLLAC's \$147 million worth of new facilities will be in full operation.

This outlook was assured last week when Mutual Security Agency approved an additional \$8,475,000 in American aid to bring the project to a conclusion.

The new French works are located at Hyange and Ebange, only a short distance from Saar and close to iron ore and coal and coke supplies.

**Equipment**—They will include a 45x114 in. blooming-slabb mill with a rated capacity of 1 million tons, a 48-in. 5-stand tandem cold reducing mill, an 80-in. 3-stand cold reducing mill, and the necessary temper mills, coil conveyors, pickling lines, etc.

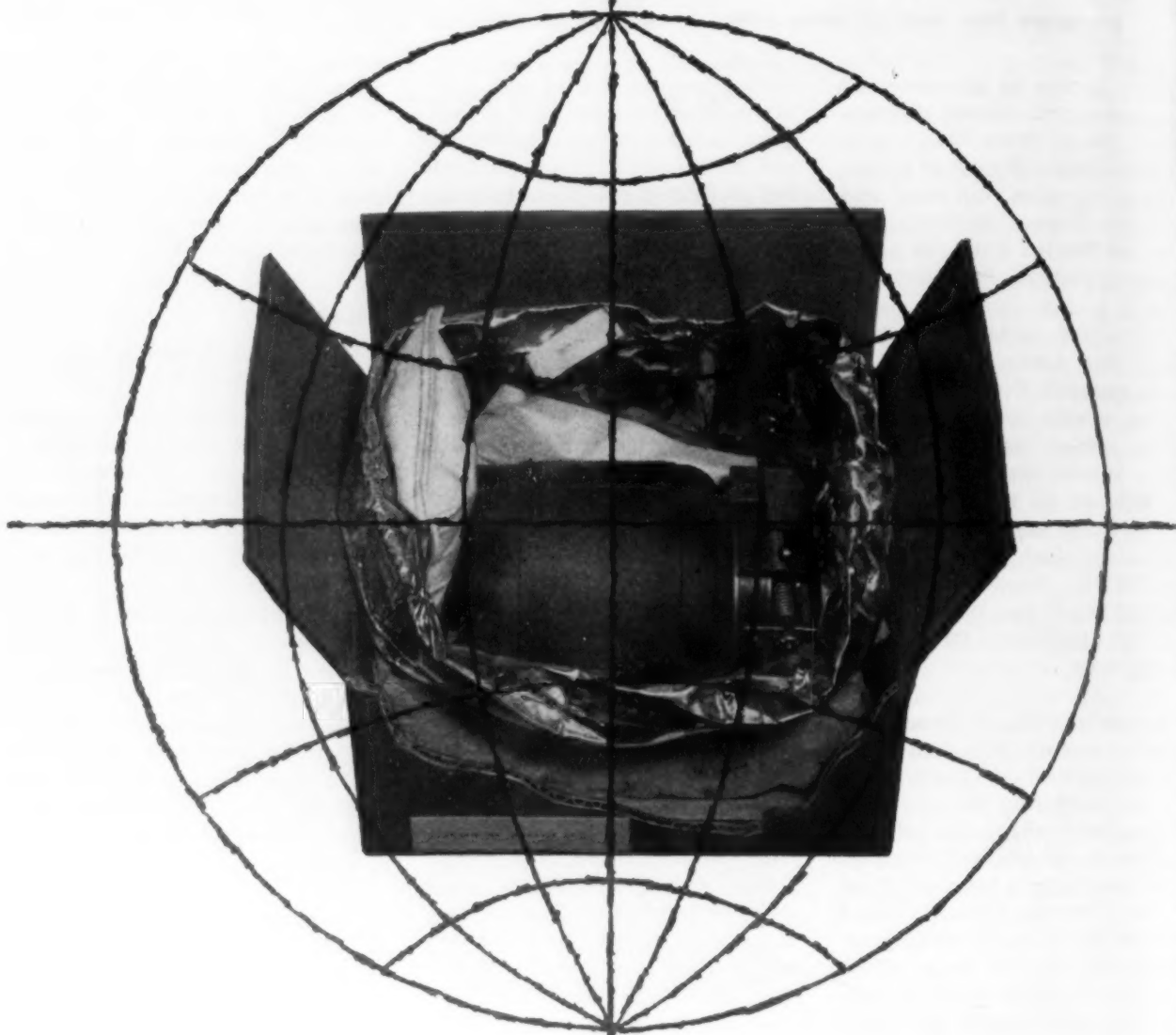
Representing a combine of nine French steel companies, SOLLAC began work on the project 3 years ago. With the help of a previous \$49.5 million in Marshall Plan funds, SOLLAC has been constructing a completely new (except for blast furnaces) integrated works, from openhearth to sheet finishing mills.

The supplemental American financing includes \$3.5 million to allow for inflationary or higher costs since the project began.



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MIL-E-6060, Type II  
MIL-B-7841 (Aer), Classes 1 & 2

AN-B-20, Type II  
JAN-P-117, Type II, Grade A, Class d  
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JAN-B-121, Type I, Grade A, Class 1 (regular and stretchable)  
JAN-B-121, Type II, Grade A, Class 1 (regular and stretchable)

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# *The* **Iron Age**

## **SALUTES**

### *E. Milton Barber*

Spare-time athlete and sportsman, this Pittsburgh Steel executive has been a steelman for 26 years.



**E.** MILTON BARBER is a transplanted Pacific Coaster. Now executive vice-president of Pittsburgh Steel Co., he was born in San Diego, Calif., in 1896. He was graduated from the University of Michigan—an early indication of his eastward migration—in 1917. That same year he joined the U. S. Army Air Corps and served as a pilot during World War I.

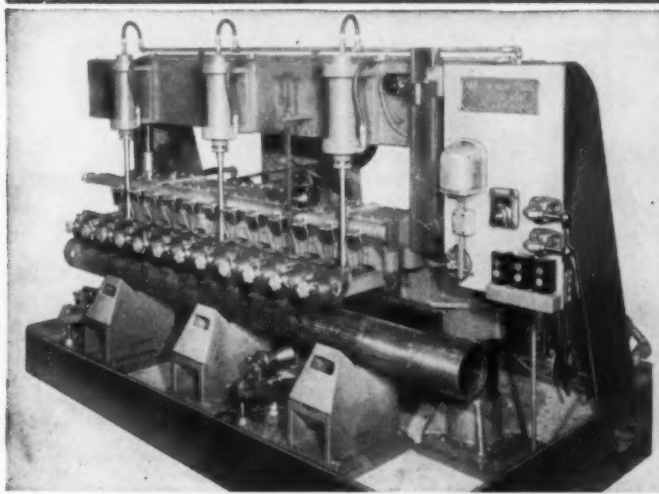
Milt has spent nearly half of his life so far as a steelman, having been associated with the industry for a total of 26 years. Once again in the West he was assistant vice-president in charge of engineering with Columbia Steel Co., a subsidiary of U. S. Steel Corp. While in this capacity, he was placed in charge of the large Geneva Steel Works at Provo, Utah.

In 1945 Milt was appointed president of the Thomas Steel Co., of Warren, Ohio, a leading producer of cold-rolled strip steel and plated products. Then, in August of 1951, the Thomas Steel Co. was acquired by Pittsburgh Steel Co. and continued operations as the Thomas Strip Div. It was at that time that Pittsburgh Steel gained Milt as executive vice-president.

He is known to his friends as "a man's man." He looks it, too, for he carries a rugged 190 lb easily on his 6-foot frame. That he loves the great outdoors is proven by his avocations. Milt is an ardent hunter and keen fisherman, well known for his prowess as a crack shot on game birds. Other hobbies that occupy his spare time are amateur photography and swimming.

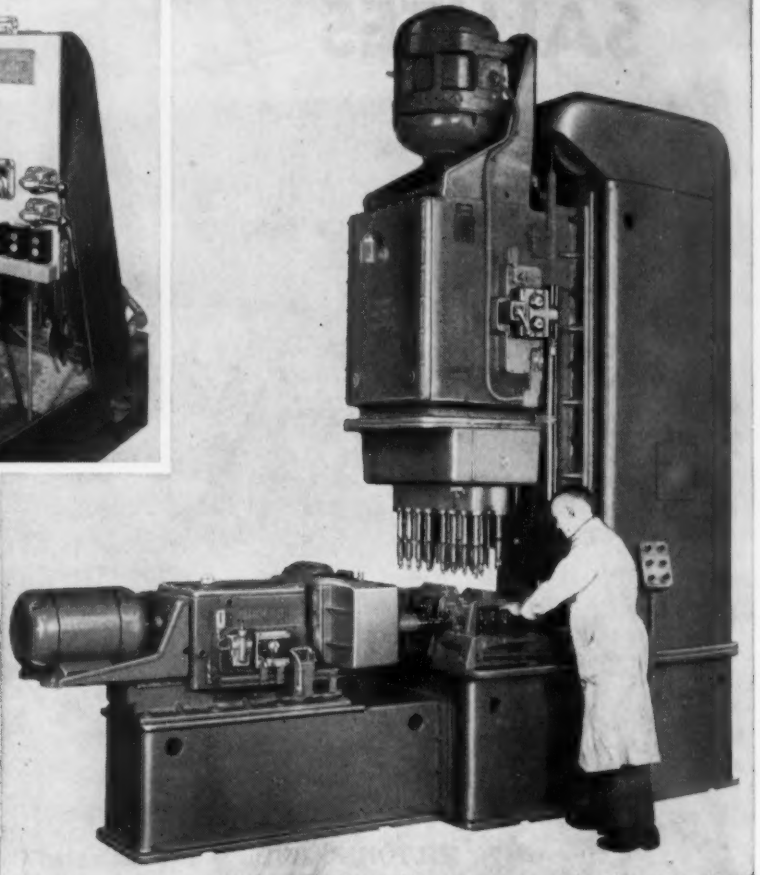
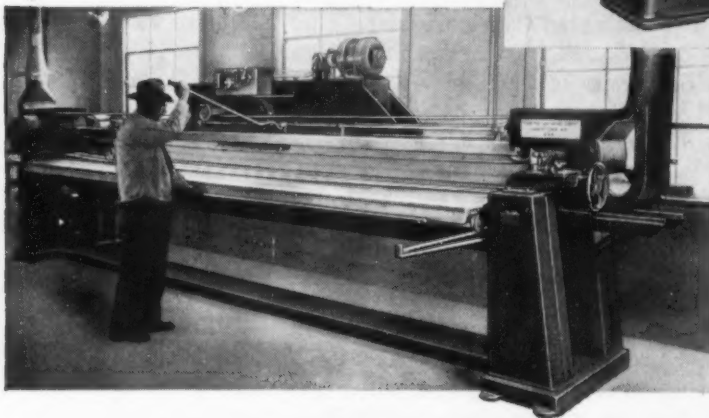


# MORE COST-CUTTING APPLICATIONS OF **VICKERS** HYDRAULICS



↑ Oil well casing slotting that formerly cost \$1.25 per foot is now done at \$0.90 per foot on the new machine designed and built by Allen Machine & Tool Co., Compton, California. Vickers hydraulic equipment raises and lowers the feed rail, controls feed rate and rapid traverse of cutters.

↓ Hydraulic unit converted old belt sander to modern automatic stroke sander and reduced time for sanding pew backs from 15 minutes to 1½ minutes. Also improved quality. Built by Curtis Machine Corporation, Jamestown, N. Y. Vickers Hydraulics used exclusively.



↑ This four-way, 38 spindle special purpose machine by Modern Tool Works, Ltd., Toronto, Ontario, does the drilling, spot facing and chamfering operations on an automobile engine head at the rate of one per minute. Vickers Hydraulic helps give it speed, control and precision.

Every day more and more machines are increasing production and cutting costs with the help of Vickers Hydraulics. See for yourself what Vickers Hydraulics can do for you . . . write for Catalog 5000 or call in a factory trained Vickers application engineer.



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4763

# The Iron Age

## INTRODUCES

Gilbert J. Rutenschroer, appointed president and general manager, **THE BOYE & EMMES MACHINE TOOL CO.**, Cincinnati, and **F. W. Boye, III**, has been elected chairman of the board.

**Douglas O. Yoder**, named president, **YODER CO.**, Cleveland.

**William J. Mair**, elected a vice-president, **INTERNATIONAL BUSINESS MACHINES CORP.**, Poughkeepsie, New York.

**Victor F. Melin**, elected secretary-treasurer, **THOR CORP.**, Chicago.

**A. E. Harrant**, appointed executive vice-president, **MILLER ELECTRIC MFG. CO.**, Appleton, Wis., and **A. C. Mulder**, named vice-president in charge of production.

**Arthur M. Over**, named director of purchases, **THE RUST ENGINEERING CO.**, Pittsburgh.

**H. B. Megill**, appointed executive vice-president and general manager of **PACIFIC NORTHWEST ALLOYS, INC.**, Spokane, Wash.

**Lester F. Cox**, elected executive vice-president and executive manager, **THERMOID CO.**, Trenton, N. J.

**Frank B. Powers**, elected vice-president in charge of manufacturing, **P. R. MALLORY & CO., INC.**, Indianapolis.

**James M. Skinner, Jr.**, appointed vice-president-distribution for all domestic divisions, **PHILCO CORP.**, Philadelphia.

**Harold H. Hill**, named divisional director, **Ditzler Color Div.**, **PITTSBURGH PLATE GLASS CO.**, Pittsburgh. He succeeds **William T. Utley**, who has retired.

**George Martin**, promoted to general parts and service manager, **WILLYS-OVERLAND MOTORS, INC.**, Toledo. He succeeds **Robert Montgomery**, who has resigned.

**Fred L. Etchen**, appointed materials handling sales engineer, **PITTSBURGH STEEL PRODUCTS CO.**, Detroit office.

**Frank L. DeCavitt**, appointed to the newly-created position of operating manager, **Plymouth Div.**, **CHRYSLER CORP.**, Detroit. **Roy W. Vorhees**, becomes factory manager.

**William A. Robinson**, named assistant chief engineer, **The Contracting Div.**, **DRAVO CORP.**, Pittsburgh.

**William F. Waina**, named manager, **Aeronautical & Special Products Div.**, **HAGAN CORP.**, Pittsburgh.

**F. B. Newcomb**, named manager of sales, central division, **AMERICAN CAN CO.**; **F. J. Dowling**, named assistant manager of sales, central division in Chicago; **R. D. Folk**, appointed sales division manager; and **R. G. Warmbold**, named sales manager, Michigan.

**K. A. Krieger**, appointed sales manager, **Tank-Trailer Div.**, **FRUEHAUF TRAILER CO.**, Detroit.

**Kenneth P. Denisty**, named product manager, **Caster & Truck Div.**, **RAPIDS-STANDARD CO., INC.**, Grand Rapids.

**Emmett W. Hines**, named general zone manager, and elected a vice-president, **OTIS ELEVATOR CO.**, New York; and **John F. Lawson**, named general service manager.

**Ted C. Gorman**, named purchasing agent, **HELI-COIL CORP.**, Danbury, Conn.



**GUSTAV LAUB**, vice-president in charge of sales was elected a director, **Vanadium Corp. of America**.



**HARRY F. VICKERS**, elected president, **The Sperry Corp.**, New York.



**F. H. ALLISON, JR.**, appointed assistant vice-president in charge of metallurgy and roll sales, **Blaw-Knox Co.**, Pittsburgh.

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## Personnel

*Continued*

William B. Thomas, appointed product manager, extrusions, Chicago office, KAISER ALUMINUM & CHEMICAL SALES, INC.

Charles H. Dickens, appointed general chemist, New York office, UNIVERSAL ATLAS CEMENT CO., a U. S. Steel Corp. subsidiary.

Clifford A. Glassman, named purchasing agent, ACME INDUSTRIES, INC., Jackson, Mich.

Paul Vinson, named director of engineering and research, SHELDRICK MFG. CO., Upper Sandusky, Ohio.

G. T. Kaufman, appointed manager, engineering service, Petro Heating and Power Equip. Div., IRON FIREMAN MFG. CO., Cleveland.

Edward J. Roach, joins Philadelphia district sales and service force, WYANDOTTE CHEMICALS CORP., Wyandotte, Mich.

James H. Oakes, named sales manager, Philadelphia plant, LINK-BELT CO., Chicago, and Byron K. Hartman, appointed sales manager, new plant, Colmar, Pa.

Randolph L. Ruhley, appointed resident sales engineer, Atlantic Coastal states, CLEVELAND VIBRATOR CO., Cleveland.

Arthur V. De Yot, named plant manager, steel boiler fabricating plant, THE NATIONAL RADIATOR CO., in Middletown, Pa.

Harold H. Hall, named general manager, CUMMINS DIESEL EXPORT CORP., with headquarters at Columbus, Ind.

R. D. Sweet, joins magnesium sales staff, THE DOW CHEMICAL CO., Los Angeles office.

Frank J. Staroba, named field sales manager, Carboly Dept., GENERAL ELECTRIC CO., Detroit, and L. L. DeCoster, becomes mid-western district manager, Chicago office.

Art Lakin, appointed managing sales engineer, new Chicago branch office, HARVEY ALUMINUM, a division of the Harvey Machine Co., Inc.

George P. Lacy, appointed manager sales, Wire Div., SHEFFIELD STEEL CORP., Kansas City office, and A. L. Bard, appointed manager grinding media sales.



FRANK H. BISHOP, elected president as well as a director, Allied Products Corp., Detroit.



F. A. KEIHN, elected a vice-president, Evans Products Co., Plymouth, Mich.



PAUL G. VIALL, promoted to vice-president, The Cleveland Cartage Co., Cleveland.



GILBERT E. DOAN, named manager, Research Dept., Koppers Co., Inc., Pittsburgh.



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Note two (2) cylinder heads are being machined simultaneously. Operating efficiently to deliver 35 cylinder heads per hour, this Baush unit shows consistently uniform production at high speeds.

## UPPER STATION — Top Side

Drills (12) push rod holes  $\frac{1}{2}$  way thru.

Drills (12) valve guide holes thru.

## — Bottom Side

Drills (12) stud holes  $\frac{1}{2}$  way thru.

Counterbores (3) intake and (3) exhaust valve seats.

Counterbore-drill (2) outer clean out holes.

## LOWER STATION — Top Side

Counterbores (12) valve spring washer seats.

Drills (14) stud holes thru (to meet).

## — Bottom Side

Drills (12) push rod holes thru (to meet).

Core drills (2) center clean out holes.

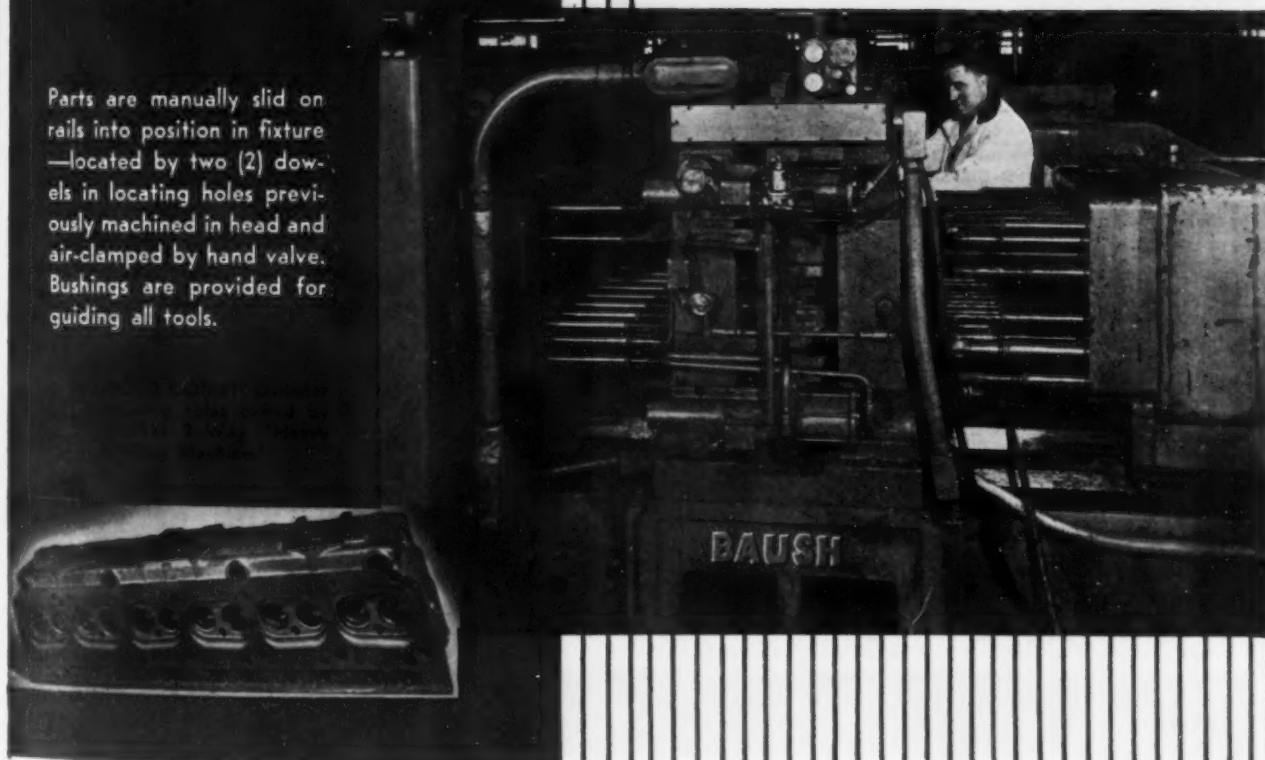
Reams (2) outer clean out holes.

Counterbores (3) intake and (3) exhaust valve seats.

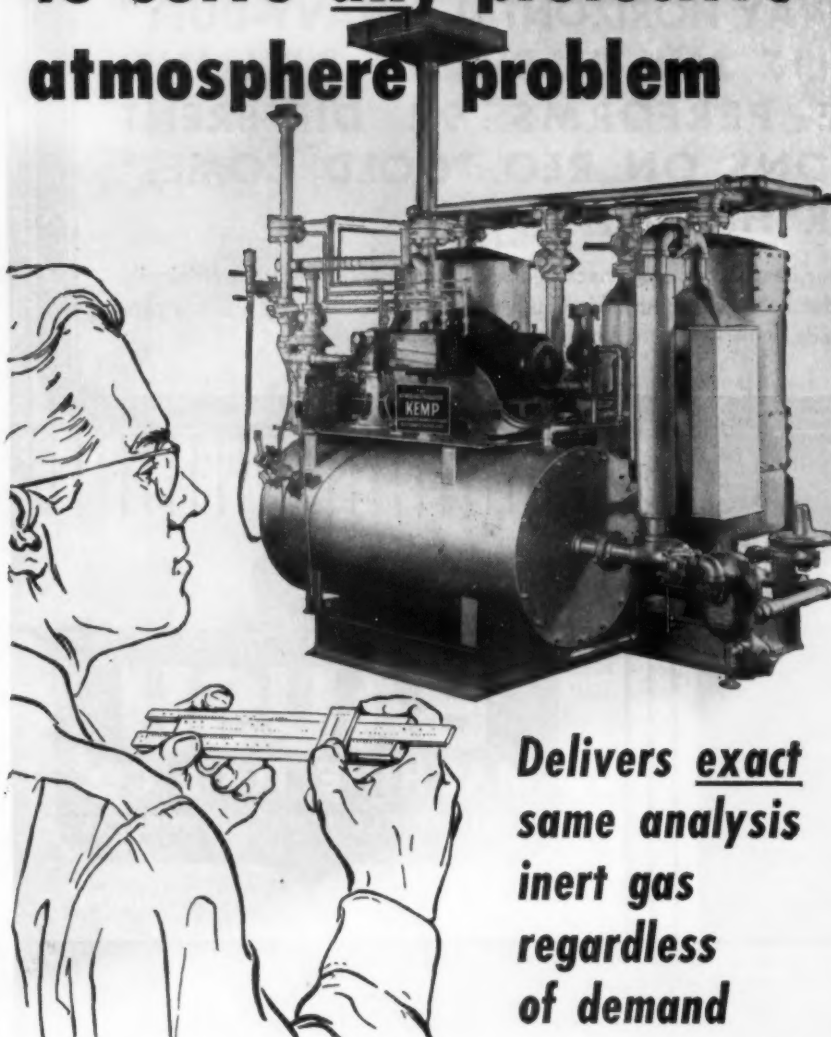
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2— 5 HP 1800 RPM for Hydraulic Pump Drives.

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SPRINGFIELD 7, MASSACHUSETTS

Parts are manually slid on rails into position in fixture —located by two (2) dowels in locating holes previously machined in head and air-clamped by hand valve. Bushings are provided for guiding all tools.



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## Personnel

Continued

D. W. Koegele, appointed assistant to general sales manager, THE OLIVER CORP., Chicago; R. D. Merrill, Jr., named manager, service parts division; O. Glenn Satterlee, advanced to assistant branch manager, Dallas; Albert B. Roberts, promoted to assistant manager, Memphis, succeeding Richard S. Shamel, who becomes industrial district manager, Kansas City..

Donald K. Davis, named sales manager, Special Products Div., INTERSTATE DROP FORGE CO., Milwaukee.

Thomas C. Ballou, appointed district sales manager, New York Sales District, AMERICAN CAR & FOUNDRY CO.

Bennett D. Jones, made manager of product development, STANDARD PRESSED STEEL CO., Jenkintown, Pa.; and Robert L. Sproat, named metallurgist.

Albert J. Rosebraugh, appointed sales manager, Refrigeration Div., PHILCO CORP., Philadelphia.

Benton W. Norton, appointed general superintendent, THE SHENANGO FURNACE CO., Pittsburgh.

George A. Strever, named assistant to the sales manager, ROYLYN, INC., Glendale, Calif.

## OBITUARIES

J. L. Perry, 71, former president Tennessee Coal & Iron Div. of U. S. Steel, Carnegie-Illinois Steel Corp. and Columbia Steel Co., recently in Pittsburgh.

Jessel S. Whyte, 61, president and general manager, Macwhyte Co., Kenosha, Wis., at his home recently.

James C. Daley, 64, chairman of the board, Jefferson Electric Co., Bellwood, Ill.

Arthur M. Long, 63, assistant general manager of sales, The Youngstown Sheet & Tube Co., Youngstown, Ohio, suddenly at his home.

Charles C. Wyatt, Sr., 57, assistant supervisor of the Tennessee Coal & Iron Div. of U. S. Steel coke ovens at Fairfield, Ala. plant, recently.

Just dip it—

# Complex parts EASILY COATED WITH ALUMINUM

Corrosion and heat resistance are given to fabricated steel parts by dipping them in an aluminum bath at General Motors. Success of the method depended on solution of a difficult refractory problem. Sound coatings are readily produced on parts of complex shape. The process, here revealed publicly for the first time, is now in commercial use.



By W. G. Patton  
Asst. Technical Editor

A method for dip coating fabricated steel products with aluminum is in successful commercial use. General Motors Research Laboratories developed the method, which produces sound aluminum coatings on parts of complex shape.

When he was working on the aluminum dipping problem at GM, A. L. Boegehold, formerly head of the Research Laboratories Metallurgy Dept. and now assistant to the General Manager, reasoned correctly that the use of a container made of the same material he was holding at temperature would help to solve the difficult problem of preventing contamination of the bath. The idea was suggested by floating candles Boegehold had seen at his family dinner table. In both cases, a temperature differential is maintained between the outside rim of the container and its molten interior.

The furnaces used by GM to coat metal with aluminum have a steel shell outside. A porous inner layer of supporting bricks is built up. When the furnace is filled, salt permeates the brick network, providing in reality a furnace lined with the same active salts used in the process. The temperature differential makes it possible to use this type of furnace.

In the past, introduction of clean steel into a bath of molten aluminum has been accomplished in several ways. Early inventors first coated the steel with alloys of tin, zinc and lead, prior to immersion in the aluminum. These fluxing alloys melted on immersion, presenting a clean surface for coating. Their presence also resulted in contamination making the process impractical for large scale production.

Protective atmospheres are used successfully commercially, as in the case of Aluminized Steel produced by American Rolling Mills Co. In Sweden, commercial processes are in operation for coating steel by means of molten salt fluxes. Most of the parts produced are for applications like charcoal burners and stove parts requiring resistance to heat.

In a process described by the Upton Furnace Co., steel is fluxed in a bath of zinc chloride, to which small amounts of halide salts are added to reduce volatilization. Parts are preheated at approximately 800°F and are then transferred to the Upton furnace in which aluminum is floated over a heavy salt used as a liquid resistor or heating medium.

In order to eliminate the disadvantages and limitations of the earlier processes, GM needed a salt bath to perform a multiple function: (1) Preheat the work to the aluminum coating temperature, (2) flux the work, (3) scavenge the bath, (4) prevent oxidation of the aluminum bath, (5) aid in draining off any excess aluminum.

A molten salt having these properties was developed, having the following chemical composition: Potassium chloride, 37 to 57 pct; sodium chloride, 25 to 45 pct; cryolite, 8 to 20 pct; and aluminum fluoride, 0.5 to 12 pct.

Development of the molten salt flux, designing and building a suitable container, and learning to control the heating of a bath that contained both aluminum and salt were the key problems in the GM development. The solutions found for these problems will become evident as the aluminum dipping installation



**"Properly preheated and fluxed parts have a silvery sheen that is readily apparent . . ."**

at Harrison Radiator Div. is described here.

Flow sheet for the aluminum coating process employed at Harrison is shown in Fig. 1. The diagram shows details for both steel and cast iron.

At present, only one product is being produced at Harrison in commercial quantities. This is the heat exchanger unit employed in an Army tank to convert heat from the tank's auxiliary engine. The unit is coated both internally and externally and replaces a part that was formerly made of Inconel.

Before coating steel with aluminum, it is necessary to remove grease, oil, dirt, scale, sand, slag, or other foreign materials. Certain types of rust will dissolve in the flux, but it is preferable to avoid long exposures in the salt.

At Harrison, the heat exchanger is first dipped in an alkaline cleaner, as shown in Fig. 2. After washing in hot water, an acid pickle is used. After a cold water rinse, followed by a hot water rinse, the part is furnace dried and held until coating.

Parts are usually dipped individually although as many as three parts may be handled simultaneously. The Harrison installation was designed for this particular job. Handling of larger production would require the use of larger tanks with bigger openings and automatic handling of parts by straight line production methods.

The immersed electrode preheat bath shown in Fig. 3 contains preheating salt and about 2 to 2½ in. of aluminum at the bottom. Heating temperature is 1280 to 1400°F. Properly preheated and fluxed parts have a silvery sheen that is readily apparent to an experienced operator.

There are four sets of electrodes. The opening is about 30 in. square. Parts are immersed for approximately 4 min before transferring to

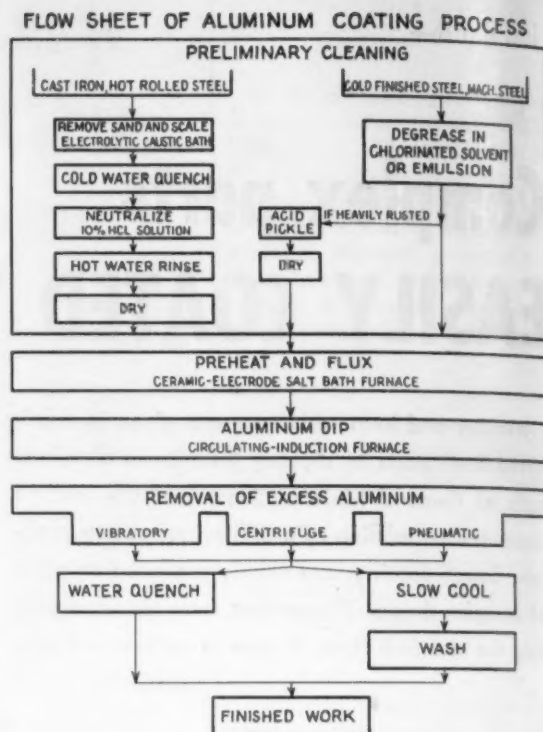


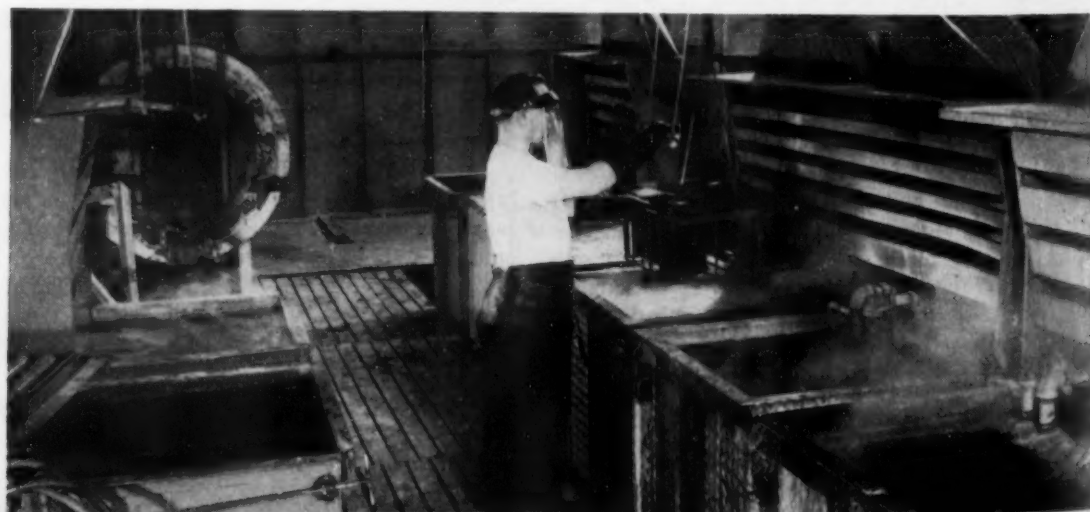
FIG. 1—Flow sheet for the aluminum coating process employed at GM to coat heat exchanger units.

the aluminum bath by means of the overhead hoist shown in Figs. 3 and 4. Smaller parts can be heated more rapidly.

As indicated in Figs. 3 and 4 precautions have been taken to protect the operator at all times. A glass shield protects against splashing of the hot salt. Controls, including skimming equipment, can be operated with full protection from behind the glass partition. In order to walk between the two salt-aluminum baths, the operator must first raise the two halves of a metal shelf lined with asbestos. In the raised position, the shelf is sufficiently high to eliminate the possibility of the worker falling into the hot salt. This arrangement also makes possible easy disposal of any drip between the two baths.

After preheating, the heat exchanger is transferred immediately from the salt to the alumi-

FIG. 2—Preparing heat exchanger units for aluminum coating. After washing in hot water, an acid pickle is employed. The part is then rinsed and dried. Then it moves to the preheat bath, Fig. 3.



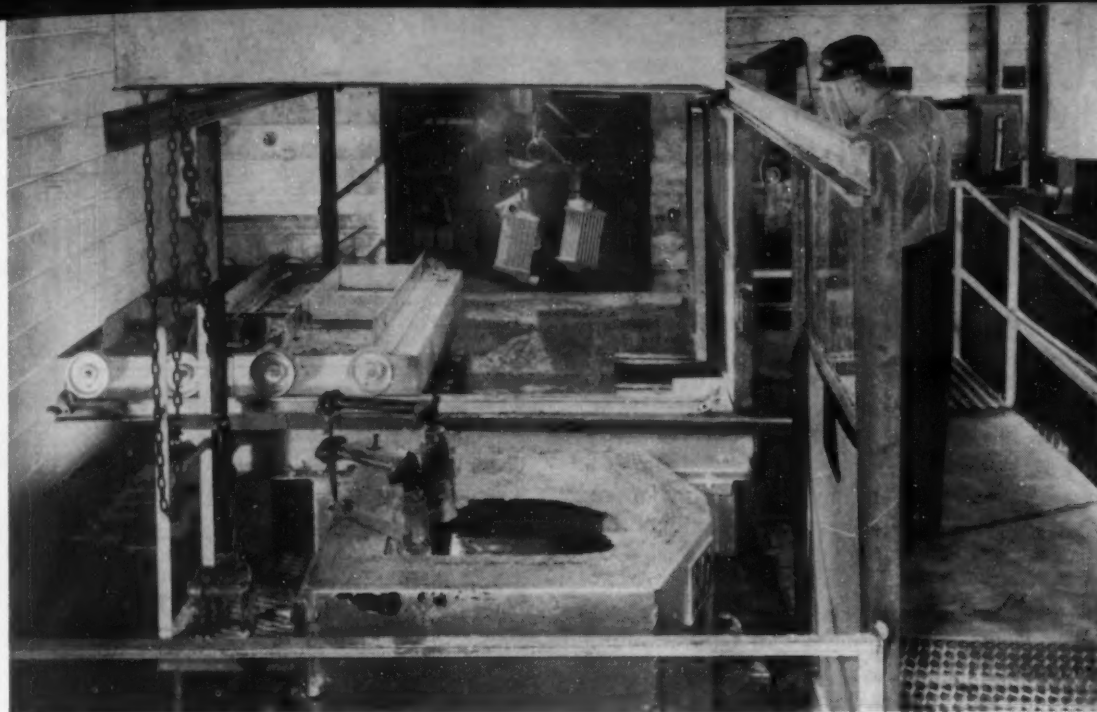


FIG. 3—The preheat bath contains about  $2\frac{1}{2}$  in. of Al at the bottom. Preheat temperature is 1280 to 1400°F.

num as shown in Fig. 4. A layer of salt flux about  $\frac{1}{2}$  in. deep covers the bath. This salt has the same chemical composition as the preheating bath and may be dipped from the preheat furnace. Parts are held for  $\frac{1}{2}$  to 1 min in the aluminum. Agitation is supplied by the stirring action of induction heating. Opening of this furnace, purchased for this application at planned rates of production, is approximately 20 in. square.

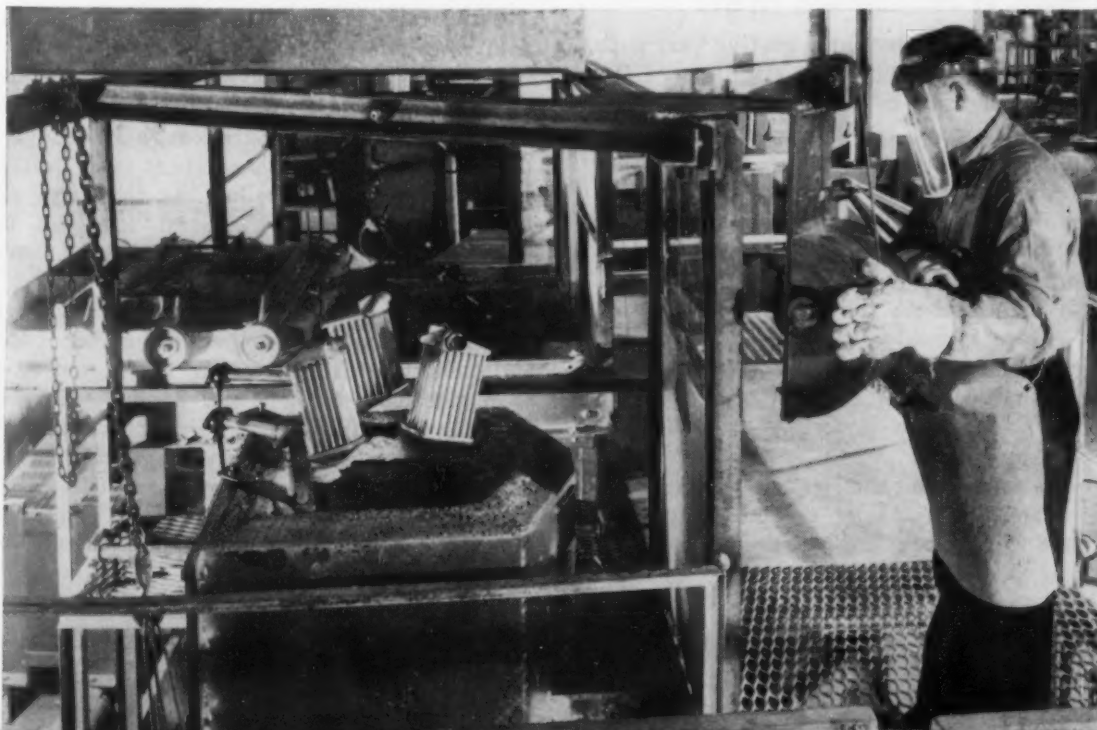
Immersion times vary with the intended service. An aluminum coating is immediately obtained after immersion of preheated and fluxed steel in aluminum. However, if a heavier alloy layer is desired, an immersion time of 4 to 6 min may be used. The molten salt protects the newly coated part on removal.

Next step in the process is removal of any excess aluminum. At the Harrison plant, the part is returned to the preheat bath, slowly raised and lowered several times and then blown off with an air hose. Air is used as soon as the part is removed from the bath.

Where other parts of different size and shapes are aluminum-coated, other methods might be employed to remove aluminum excess. The method used will be determined by the shape of the part. Vibratory motion will jar loose the droplets that collect at the lowest edges of the work. Centrifuge methods have been used successfully with parts like muffler ends. Air removal produces a uniform layer thickness.

In the draining operation, the salt cover prevents the formation of an envelope of tough

FIG. 4—Aluminum dipping bath at the Harrison plant. A layer of salt flux about  $\frac{1}{2}$  in. deep covers the bath.



**"Submerged electrodes may be employed, but immersed electrodes are preferred . . ."**

aluminum oxide. This film of salt remaining on the aluminum after solidification is removed in a water rinse.

In the preheating furnace, lining of special refractory brick is used to prevent erosion of the inner installation refractory by contact with active circulating salt. Submerged electrodes may be employed, but immersed electrodes are preferred by GM technicians to take advantage of the downward circulation of salt they produce.

A bath of aluminum is maintained below the salt so that, if desired, parts can be aluminum coated in the furnace used for preheating. Circulation in this area is provided by a mechanical stirrer. A bath of 12 in. of aluminum can be maintained within 20°F with a 12-in. salt layer above it in this manner.

The induction furnace employed for dipping is lined in the upper portion to protect refractories against active salt. Fig. 5 shows a cross-section view of this furnace, including the shell, lining, molten aluminum loops that form the secondary circuit of the transformer, and the core and primary winding. This furnace operates on a high input of 60 kw and idles between 5 and 20 kw. The aluminum acts as dead-short secondary circuits. Induction stirring action circulates the aluminum.

Laboratory investigations show that scrap aluminum may be employed, for example to coat mufflers. A test run showed 12.5 lb of aluminum per 1000 muffler ends was satisfactory. Salt consumed on this test run was approximately 24.5 lb per 1000. Total power consumed was 91 kw-hr per 1000 pieces.

### Two layers of iron-aluminum formed

Properties of the aluminum coating vary with (1) composition of the steel, (2) time of the dip, (3) temperature of the dip, (4) subsequent heating of the part, (5) steel preparation and (6) aluminum alloy composition. Examination of the microstructure shows two distinct layers are formed: Iron-bearing aluminum on the outside; and a layer of iron aluminum alloys between the outside layer and the steel. Very little is known about the composition of this layer. There is evidence, however, indicating it is composed of a series of compounds. This layer is brittle, which constitutes one of the limiting factors of the process.

As shown in Fig. 6, the formation of an iron-aluminum compound during aluminum coating appears to be by mutual solution of iron and aluminum, rather than aluminum diffusion into the steel. Resistance to heat

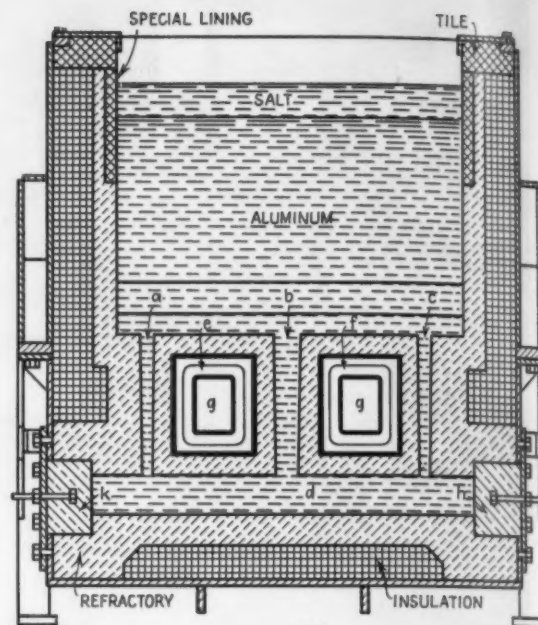


FIG. 5—Cross-section diagram of the induction furnace used for dipping. The aluminum acts as dead-short secondary circuits and circulates by induction stirring.

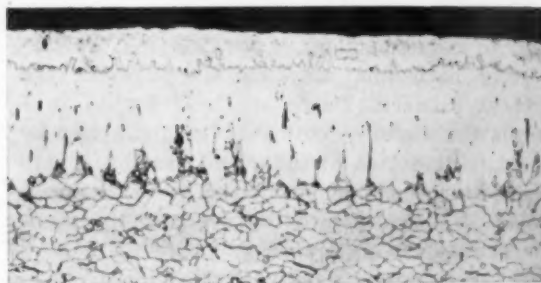


FIG. 6—Photomicrograph of an iron-aluminum compound formed during dipping. 100X nital etch.

corrosion is made possible by the formation of this layer of aluminum-iron alloy.

Aluminum dipping was originally undertaken to develop a material for mufflers with an outstanding combination of resistance to both combustion gas and condensate corrosion. Treated inner tubes increase the life several fold when the car is driven at high speed.

Other applications have been suggested and experimental work on these parts has gone forward. Aluminum-coated carburizing pots on test in the GM Research heat treat department have given excellent service with no indication of failure. Neutral salt pots of aluminum-coated pressed steel have given service life equal or better than cast alloy pots.

Among numerous suggested applications are truck, coach and passenger car muffler shells and ends, truck muffler inner tubes, fabricated steel manifolds for a Diesel engine, tail pipes and exhaust pipes, carburizing pots and furnace supports for heat treating and neutral salt treating pots. Co-workers at GM Research with Boegehold on this project were C. J. Tobin, Howard Grange, and D. K. Hanink. The process is patented.



Finkl melts their own—

# Forge shop installs COMPACT Steel melting plant



By D. I. Brown  
Technical Editor

A. Finkl & Sons' Co. new melt shop at Chicago has an annual capacity of 60,000 tons. The two 25 ton electric furnaces and all auxiliary equipment are an engineering feat of compactness and efficient use of space. All raw materials except scrap are packaged, palletized or shipped into the plant in containers. A 35,000 cu ft Dri-Ox oxygen plant and a direct reading spectrograph are other modern features. Better steel quality and production control have been achieved as well as savings in steel cost by the installation of the melt shop.

One of the most modern and compact electric furnace shops built at a cost of \$2½ million melted its first heat in April this year. This two-furnace shop built by A. F. Finkl and Sons, Chicago, makes this forging plant an integrated steel producer, which is one of the few such cases recorded in recent years.

The melt shop has a theoretical annual capac-

ity of about 60,000 ingot tons and will melt all fully killed quality steels, 70 pct of which will be alloy types. Much of the scrap needed for the operation will be generated in their own forge shop. The company will continue to buy from outside producers billets and blooms up to 12 in. in both carbon and alloy steels.

The melt shop covers about 30,000 sq ft which includes the raw material bin areas shown in Fig. 1. These five concrete bins will hold 15,000 tons of prepared scrap. Scrap is loaded and unloaded into the bins by a locomotive magnet crane. The bottoms of the bins are about 5 ft below the track. The track scales, shown in Fig.



FIG. 1—The five concrete scrap bins are capable of holding up to 15,000 tons of prepared scrap. The Whiting Track-mobile pulling the changing bucket is resting on a 200 ton capacity track scale.

**One Truckmobile replaces large switching yard, cuts costs . . .**

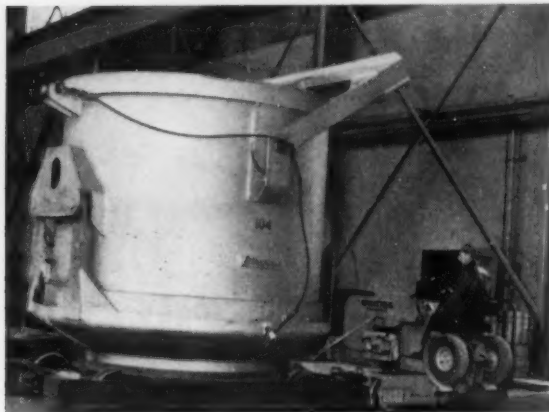


FIG. 2—Scrap being delivered to the melt shop. The clam shell bottomed charging bucket is opened with the cable sling shown hanging on the bucket.

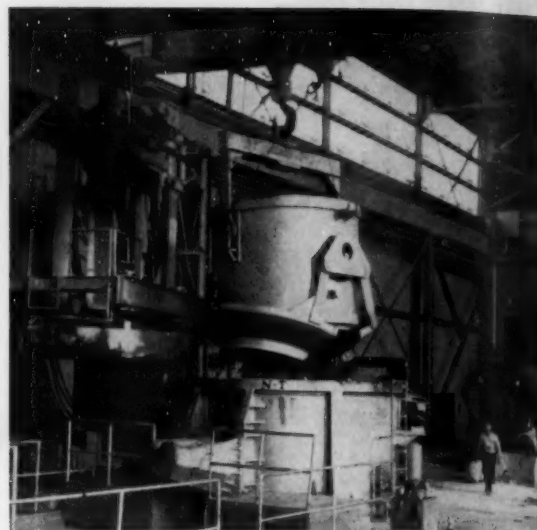


FIG. 3—An auxiliary crane hook is used to pull the cable, once the charger is located over the furnace, which opens the clam shell bottom.

1, have a capacity of 200 tons. One of the innovations of this shop is the scrap handling system. The scrap is prepared and charged into the Lectromelt clamshell bottom charging buckets, shown in Fig. 2.

Inasmuch as space is limited, every effort had to be made to keep equipment size to an absolute minimum. The scrap car is moved in and out of the melt shop by a Whiting Trackmobile. The Trackmobile has proved a great space saver as without it a miniature railroad yard would be

needed to handle the incoming cars. The Trackmobile does all the switching and spotting of cars. It can move three fully loaded cars or six empties at once and considerable savings in switching costs which would have been paid to the railroad are realized. In addition there is no waiting around for the railroad switcher to show up.

A new air conditioned building adjacent to the melt shop houses the chemical and metallurgical labs, as well as the wash rooms for the

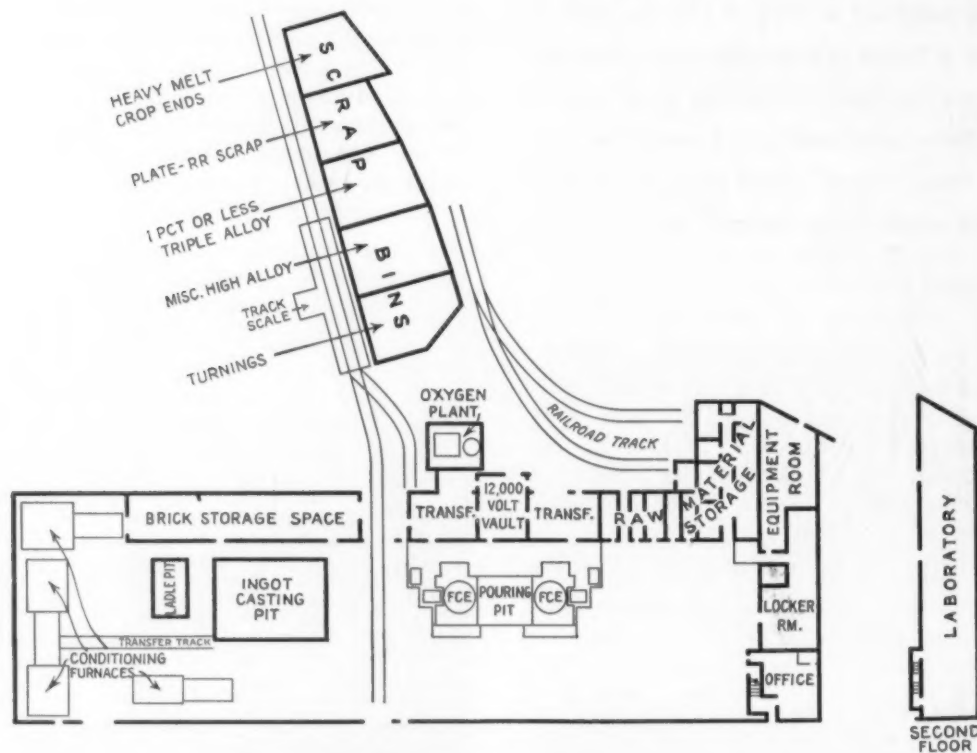


FIG. 4—Plan view of Finkl's new steelmaking plant.

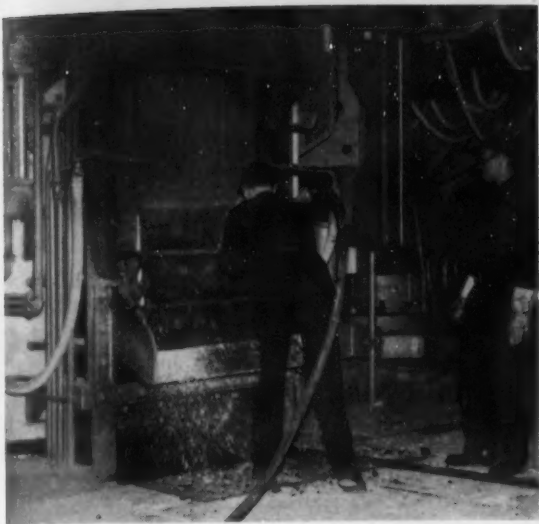


FIG. 5—An immersion blow tube pyrometer is used to check metal bath temperature. A special splash door protects the crew. The temperature is automatically recorded.

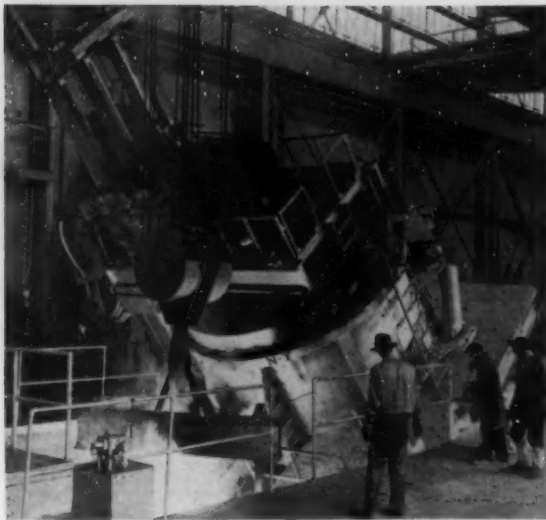


FIG. 6—The two 25-ton Lectromelt furnaces both pour into the same pit. The top is swung out for charging hydraulically, the tilting mechanism is also hydraulic.

melt shop workers. The atmosphere in the melt shop building is kept exceptionally clean through the use of seven high velocity suction fans mounted on top of the building. These 36 in. diam fans, made by Roberts Co., Pittsburgh, each exhaust 2400 cfm of air and operate at 1140 rpm.

It only requires 5 to 6 min to completely charge either of the 20-ton top charging Lectromelt furnaces as shown in Fig. 3. Average down time from power off to power on is 20 to 25 min. Prior to charging the light scrap in the charging buckets heavy scrap is placed in the furnace bottom by a 55 in. magnet.

The service crane used for charging was built by Harnischfeger Corp. and is equipped with their Magetorque controls. Automatic weighing devices designed by Finkl are used on both the 40-ton main hook and the 10-ton auxiliary hook. The weights are instantaneously recorded in the cab of the crane and are passed on to the furnace crews so that they know within very close limits how much scrap has been changed. Baldwin Southwark strain gages, wired to a Leeds and Northrop recorder, has proved to be a simple effective weighing instrument that so far has stood up well in service.

Another space saver which also makes operation cleaner and faster is the storage method employed at Finkl for raw materials. All ferro-alloys, burned-lime dolomite, etc., are stored in concrete bins. Eleven of these bins are used, six of which are top charged by a loco crane which operates in the yard at the back of the building. All incoming raw materials except scrap are either packaged, palletized or shipped in container cars which permit the locomotive crane to pick them from the cars and lower them into their respective storage bins. No manual handling of these raw materials is required in

storage. From the bins to the melt floor labor is required, but even here the labor needed is held to a minimum.

Access to all bins is within 100 ft of the furnace platform. Fig. 4 shows a plan view of the plant. At the rear of the storage bin area is located a 35,000 cu ft Dri-Ox which supplies oxygen to the melting floor. Oxygen is sometimes employed for carbon reduction. Oxygen is

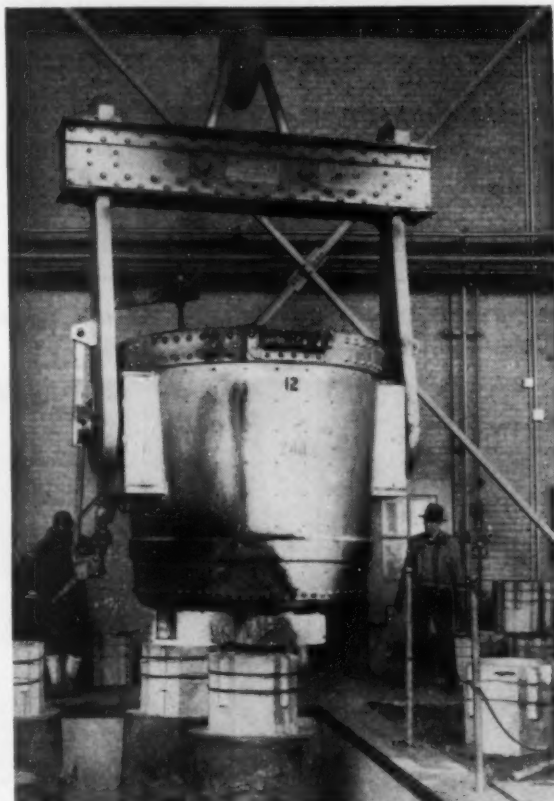


FIG. 7—Teeming an ingot in the two level pouring pit at A. Finkl & Sons Co., Chicago. Metal as well as ceramic hot tops are used in this shop.



## Better steel quality and production control . . .



FIG. 8—A 30-ton ingot mounted on a car bottom about to enter one of the forging heating furnaces.

also piped around the plant for a variety of other uses.

Heat times average about  $3\frac{1}{2}$  to 4 hr. on most types of steel melted. Practically all heats are 0.30C or over and no open or semi-skilled production is contemplated.

Indicative of the modern equipment and methods employed in this shop is the Rayotube immersion pyrometer used for checking the temperature of the steel bath. Fig. 5 shows the crew using this instrument at Finkl.

About 60 pct of the tonnage produced in this shop is die block analysis. Ingot weights range from 55 tons down to 3 tons. All ingots are cast big-end-up into fluted or corrugated molds with hot tops averaging 20 pct of overall ingot weight. While the furnaces, Fig. 6, are rated at 20 tons they are actually producing between 25 and 30 tons per heat. Ingots in excess of 30 tons, are made by pouring the product of both furnaces into the same ladle. In this instance both furnaces are scheduled and worked so that they are ready to tap within a few minutes of each other.

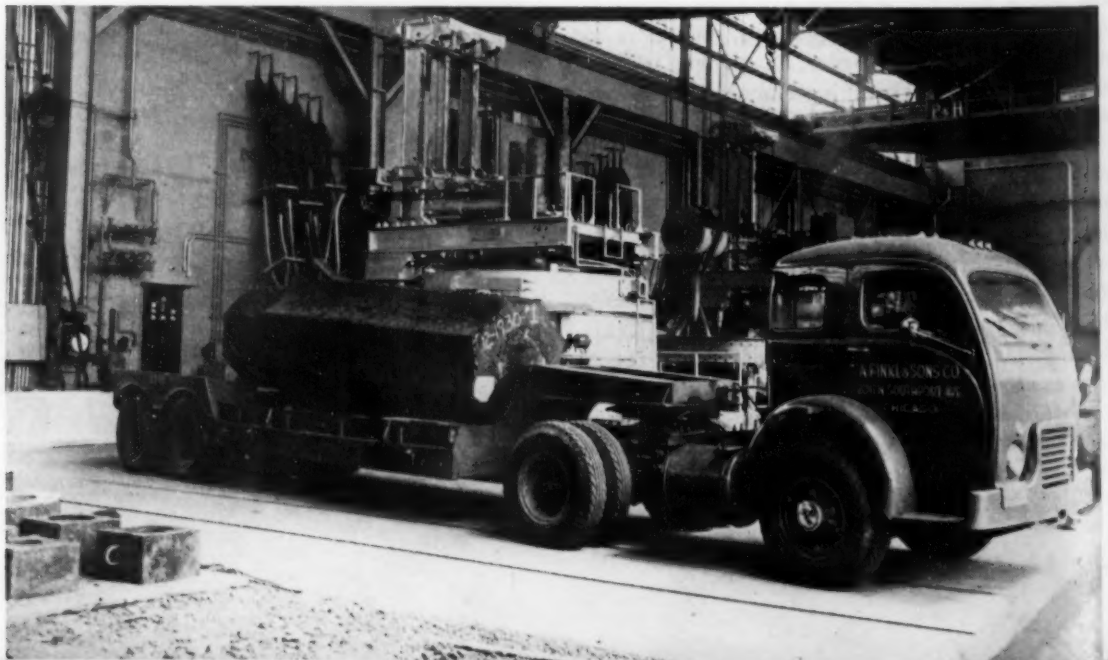
The tapping pit is 15 ft deep and large enough so that both furnaces tap into ladles in the same pit. The ingots are poured in another pit, Fig. 7, to the left of the furnace area as shown in plan view. The pouring pit which is 30 ft wide and 45 ft long, is arranged to accommodate four separate rows of ingots with space in between to permit setting up other molds because some of the large ingot sizes must be held as long as 18 hr before stripping. One section of the pouring pit is 10 ft deep for short ingots. The other section is 15 ft deep to accommodate larger ingots.

After stripping the ingots are either charged into the holding furnaces similar to that shown in Fig. 8 or placed onto the ingot transfer truck, Fig. 9, and taken directly to the reheating furnaces in the forge shop. Each of the holding furnaces has a capacity of 125 tons of ingots and serves as holding furnaces as well as isothermal or full annealing furnaces.

The plant has its own water system for furnace cooling where the water is constantly cleaned and recirculated and treated. This system has a capacity of 600 gpm and cooled water discharges at 110°F. The water is treated to eliminate solids and the temperature is controlled by the use of a cooling tower.

Analysis, including preliminaries on the

FIG. 9—Hot ingots from the holding furnaces in the melt shop are transported to the forge shop on this specially designed ingot transfer trailer.



heats in the furnace, are run on a Baird reading spectrograph shown in Fig. 10 and Fig. 11. This allows the melt shop to determine quickly the melt down analysis as well as speedy checks taken before tapping. The spectrograph permits a full chemistry check of 11 elements in about 5 min except carbon, phosphorus and sulfur. These three elements cannot be checked by spectrograph methods and are run by wet methods in the ultramodern chemical laboratory shown in Fig. 12.

The advantages of a forge shop melting its own steel are well recognized. One of the chief benefits is the savings on incoming freight charges since in this case previous sources were located 500 to 600 miles from Chicago. The average freight costs on incoming ingots purchased by Finkl were about \$10 per ton. Also the cost per ton in making ingots on the spot, disregarding freight, is cheaper than purchased ingots.

Another advantage is that less fuel is consumed in the forge shop. When using outside ingots the heating times and fuel consumption in

bringing cold ingots up to forging temperature are excessive. The old heating practice starting with cold material consumed 7 to 9 days on large ingots. Present heating practice on the same size ingots takes but 24 to 30 hr. No ingots made at Finkl are permitted to air cool down to room temperature. As soon as the ingots are stripped they are charged into the holding furnaces. These furnaces hold the ingots at 1250°F until they are needed at the forge shop. Often times the ingots are given a full or isothermal anneal in these furnaces.

Better control of steel quality and more precise production planning of all operations have been achieved since the melt shop was installed. Steel is made available as required by the forge shops and each heat is melted and processed to meet a specific order or application. Formerly the shop had to often wait many weeks after receiving an order before the ingots arrived at the plant. Another benefit is that the forge shop no longer has to inventory a large stock of many sizes of ingots of varied analysis.



FIG. 10—Analysis of 11 elements can be made in about 5 min on the direct reading spectrograph. Operator is mounting a test bar in the specimen holders.

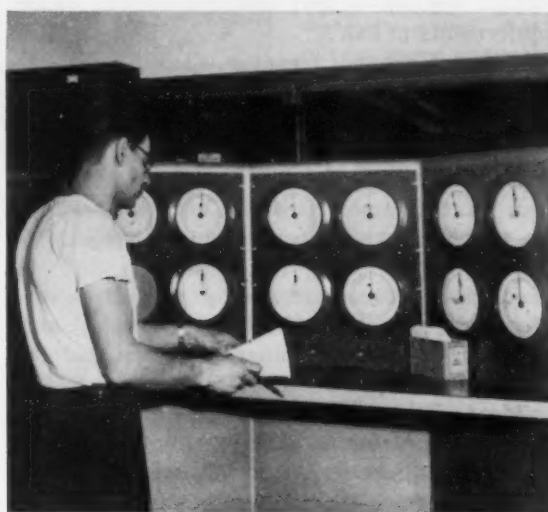


FIG. 11—Heat analyses are read directly from the instrument panel and immediately transcribed to the furnace operators on the melting floor.

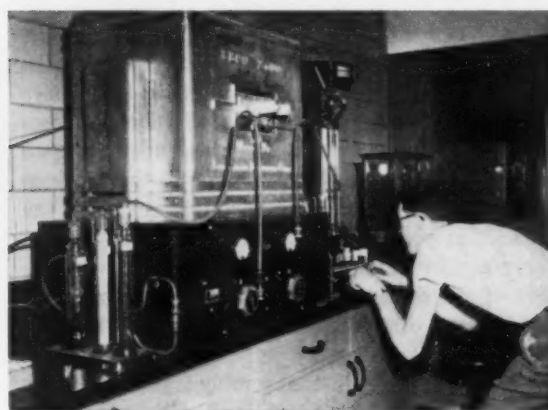


FIG. 12—Part of the equipment located in the ultra modern chemical laboratory in Finkl's new plant.

Put it on a belt—

## Good materials handling permits MORE OUTPUT IN HALF THE SPACE

Pipe assemblies are not normally thought of as suitable for highly-mechanized production techniques. But Ryan Aeronautical Co. has set up a straight-line fabrication operation along a 140-ft belt conveyor. It has permitted expanding production of tank engine exhaust systems in half the space a conventional plant layout takes.

**W**ith a new motorized assembly line technique Ryan production experts have expanded exhaust systems output and cut factory space requirements in half.

Conceived around a continuous belt conveyor system, the new fabrication line is geared to turn out thousands of exhaust manifolds for the Continental engines which power General Patton tanks. Stretching 140 ft through the heart of the Ryan plant, the motorized belt has neatly solved two problems which perplexed factory supervisors.

Squeezed between expanding production requirements, requested by Continental, and stepped up orders from other important customers, Ryan factory supervisors were forced to dig for ideas. Factory floor space was the problem; it was disappearing in a maze of new machines and assembly lines.

The solution to the dilemma was the use of a continuous belt conveyor system similar to that used in the food packaging industry, with the tool program streamlined to fit straight-line assembly methods.

Since its inception, exhaust systems manufacturing has been considered to be more like the garment making industry than any other, because both produce innumerable models and sizes of the product with the same equipment. Consequently, Ryan production machines are arranged along logical parts flow lines and the various components are threaded through them in the fabrication process. Machines are placed so that trucks can bring the parts to them and the pathways of the different parts may be widely divergent because of the varying requirements of each model.

With a straight-line assembly system, a new approach had to be visualized. The machines, tools and jigs had to be carefully positioned along the line. Exact number and spacing of these ele-

ments had to be coordinated with the conveyor line speed. Careful timing of each operation was demanded. The exhaust manifold consists of five separate and differing components: An outlet section, two mid-sections and two end-sections. Each requires different operations performed upon it but all must flow down the same production line at uniform speed.

Eighteen separate tasks, such as assembly, welding, sandblasting, sizing, facing and inspection, must be performed along the line and no backtracking of the parts is allowed. Smooth dovetailing of these operations had to be planned to insure that the prescribed proportions of each manifold would arrive at the end of the conveyor line. Engineering and tooling changes were worked out to permit the parts to be made under these conditions.

With the new assembly line in action, production of manifolds has been substantially increased. Space occupied by the entire line is only half of that which would have been required by the former method of fabrication. In addition, the new belt line system has raised efficiency by reducing employee fatigue, preventing parts damage, simplifying training and providing better control of parts.

Key function of the motorized belt is to bring the parts within easy reach of every employee in a uniform flow. This relieves him from having to move about to get and dispatch parts, load conveyor trucks and wait for others to bring components to him. This saves his time and energy. It also permits the telescoping of all machines into minimum space because room for truck delivery is no longer required.

Parts are maintained in top condition as they are fabricated because they are transported upon a rubber-impregnated belt. Time required to orient experienced employees to the assembly pattern is stepped up from 2 hr to only 30 min





**RUBBER CONVEYER BELT,** 140 ft long, is the center of a straight-line fabrication operation on tank engine exhaust systems. Steel shelves on each side of belt provide storage space so no component goes beyond point where it is to be used.



**TYPICAL FABRICATION** stations along the conveyer belt are these welding booths, shielded from each other by curtains. Several different sizes and shapes of exhaust systems are handled on the same equipment along the single conveyer line.

because the complete sequence of operations is laid out along a straight line which can be quickly understood by a newcomer. Certain employees are trained for all tasks so that they can be substituted in place of those who may miss work because of illness.

Control of the parts and fabrication rates is

**END OF CONVEYER** discharges finished exhaust system sections into large bins, from which they are taken for fabrication by welders into complete engine sets. Girl at left attaches flexible joints while welder at right builds unit.



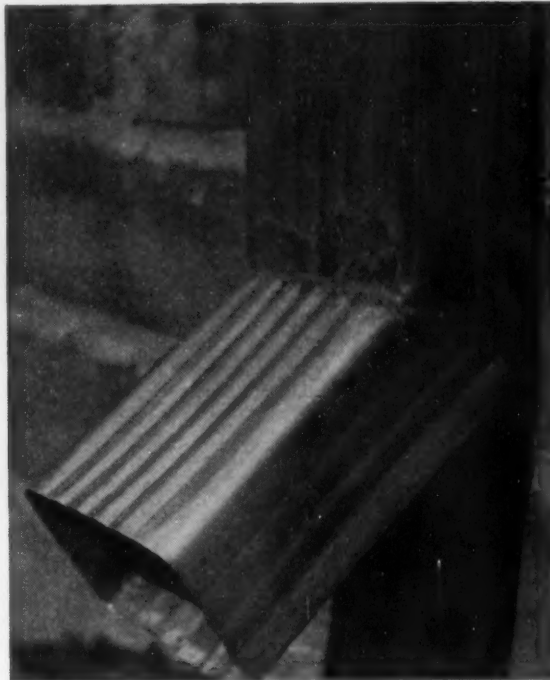
simplified because the foreman can see at a glance where all components are and determine causes for shortages or delays without looking in several areas.

An added premium resulting from the installation of the new system is the approval of the employees who work on the line. Generally, they like the new method and welcome the benefits which it brings to them in facilitating their work.

The conveyer system was built and installed by the Standard Engineering Company, Los Angeles. The belt is a continuous loop, 280 ft long and 22 in. wide, made of rubber-impregnated canvas. It is suspended over steel rollers along the 140-ft assembly line and wound around steel, rubber-coated drums at each extremity. Power is supplied by an electric motor which can be adjusted to provide belt speeds running from a few inches to several feet per minute.

A steel shelf is located on each side of the belt so that parts can be removed from the conveyer without creating a storage problem at any station. The width of the belt and shelves is designed to give complete access to parts from both sides of the belt line. These design specifications and the good flexibility of the conveyer drive give the system wide usefulness and adaptability to other types of fabrication.

Type 430 stands the drain—



TYPE 430 STAINLESS steel is easily soldered. Roughen surfaces to join, and use a stainless steel flux.

## STAINLESS GUTTERS, DOWNSPOUTS

### Easily Fabricated

Type 430 chromium stainless steel is becoming more and more popular for rain drainage equipment. Gutters and downspouts are easily fabricated on machines used for other materials. Five-in. diam downspouts are formed on a 4-in. roll to compensate for springback. Irons should be hotter than normal and a stainless steel flux should be used for soldering. High strength gives extra resistance to heavy ice and snow loads.

Type 430 chromium stainless steel is finding a new and growing market in roof drainage equipment. Stainless gutters and downspouts are durable and attractive. Straight chrome stainless is free of government controls and readily available to the sheet metal trades.

In several Long Island (N. Y.) housing devel-

opments the 17 pct chromium stainless has held up well. The alloy's yield point of 50,000 psi is much higher than that of other roof drainage materials. This extra strength permits stainless to withstand heavy ice and snow loads without sagging and to resist buckling and cracking from extreme temperature changes.

Soot, dirt, and roofing gravel often wash over roof drainage equipment and wear softer materials thin, especially in valleys and elbows. The hardness and abrasion resistance of chromium stainless are useful in overcoming such troubles. Maintenance is held to the minimum. An occasional washing with soap and water keeps the material bright.

Type 430 lends itself to extensive prefabrication. A high strength-weight ratio permits handling of extremely long sections which may be stored without danger of corrosion or rust. Fabrication can be done on regular shop equipment.

At Long Island Tinsmith Supply Corp., New York City, 5-in. half-round gutters are formed



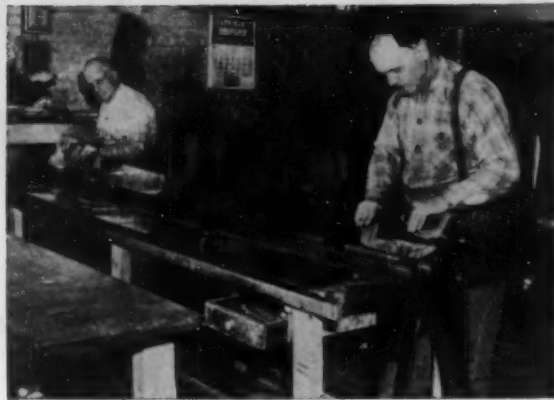
ROLLING 5-in., half-round gutter from 28 gage Type 430 stainless. Four-in. roller compensates for springback.

on a 4-in. rather than 5-in. roller to compensate for springback. In truing, seam pinching, and shaping of leaders, a lubricant such as Wayne 3-B is recommended.

In general, the same procedures and dies (polished and free from scratches) can be used on 28 gage Type 430 stainless steel as are used for 26 gage mild steel. Although sharp corners can be made, larger radii will aid in the forming operations. Shearing requires sharp blades. Clearances of 0.001 to 0.002 in. are recommended.

Careful soldering is necessary. Solder with a 50 pct tin content should be used. A stainless steel flux, raw hydrochloric acid, or a flux containing one-half uncut and one-half cut acid is used.

Where a highly polished finish such as 2B is being soldered, surfaces to be joined should be roughened. A large soldering iron slightly hotter than when soldering galvanized iron should be



EDGING A LOCK seam from chromium stainless. Operation is performed on same edging machine used for other metals.

used for best joining results.

Cleaning after soldering is important to remove the corrosive flux. Use a 5 to 10 pct solution of washing soda, soap, and water and scrub thoroughly.

Stainless nails, hangers, and other fittings are readily available and should be used to fasten Type 430 equipment. Galvanized fittings may rust or bleed and discolor surrounding surfaces.

After chromium stainless equipment has been installed, it is important that it be thoroughly cleaned of solder droppings, stains, and dirt. Noncorrosive scouring powders and fiber brushes should be used. For a final rinse, clean water is recommended.

Painting gives added protection to stainless gutter and downspout equipment. Ordinary exterior paints can be used, if desired, but since stainless has a hard, close surface, a vinyl type wash primer must be used first.



THOROUGH CLEANING after soldering of this stainless steel mitered corner will avoid local corrosion.



TRUING, SHAPING and seam pinching of stainless leader may be done on conventional corrugating machine.



# How To Get the Most From MILLING MACHINES

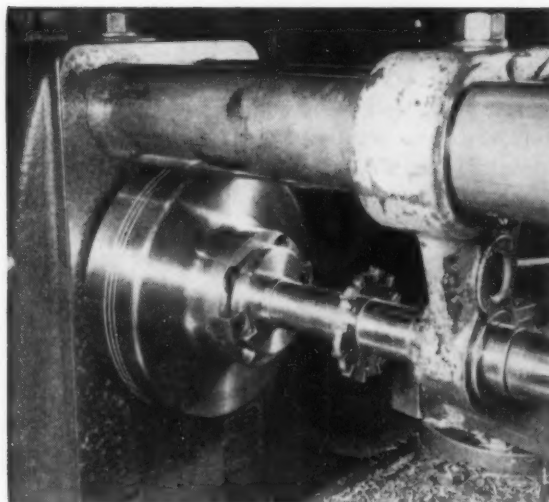
**Flywheels,  
rack milling devices, combinations of attachments**



**By John E. Hyler**  
John E. Hyler & Associates  
Peoria, Ill.

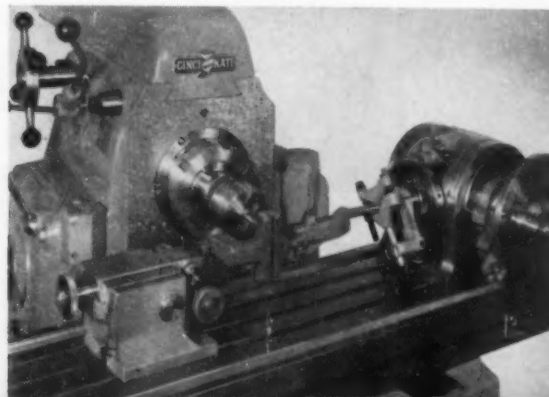
## Fourth of a series

Flywheels are an aid in heavy cutting, particularly with carbides. Even machines with built-in flywheels can often use auxiliary flywheels to good advantage. Special rack-milling equipment can be attached to milling machines. Much flexibility and versatility increase comes from using two or more attachments in combination.



**FLYWHEEL** attachment in use on standard milling machine. Even machines with built-in flywheels can use auxiliary flywheels, closer to the cutter, on some cuts.

**QUICK-CHANGE** adaptor being used in connection with a universal dividing head. Job is boring two holes, at right angles to each other, in the workpiece shown.



Usually, no great amount of difficulty is encountered in milling ordinary tapered work. It is generally blocked up without difficulty. Where there is a great amount to be done, a work-holding fixture may be provided which will automatically produce the desired taper. There are cases, however, where tapered reamers and similar work must be held between centers while being milled. Here, index centers must be used. In such cases, setup is more difficult. Special facilities are provided to aid such work.

One device is an auxiliary tilting table. This has one T-clot in its surface, running longitudinally. The table is mounted on a trunnion fitting at one end, and on a slotted fitting at the other. Thus it can be tilted longitudinally through a reasonable range. By mounting index centers on top of this auxiliary table, and tilting the table the proper amount, the workpiece is

correctly held between centers for the cut to be made. The slotted end is provided with an adjustable screw, the lower end bearing directly on the milling machine table. This prevents any possibility of the slotted end of the table dropping down without knowledge of the operator.

Another setup used for similar work incorporates a compensating dog and driver. Using this type of setup, tapered reamers and similar work can be dogged on the shank end, and supported by a center at the tailstock end. In this case, the tailstock center is held in a bracket. The bracket is in turn bolted to the vertically-slotted tailstock. The bracket which holds the center is provided with an external arc at the top. This arc is graduated in degrees on its circumference, up to a point  $45^\circ$  each side of horizontal. There is a knob and screw for advance or retraction of the center when setting and removing workpieces.

#### Expanding mandrels still used

When centers of this device are offset for taper work, the driving dog constantly changes its position at point of drive. A special compensating dog is therefore used. The tail of the dog has a spherical roller, free to revolve. This runs in a close-fitting groove in the arm of the holder. This action allows the dog to freely adjust its position with relation to the holder while the work is revolving. The arm of the holder is provided with adjustment to keep a close fit at all times with the spherical roller on the dog.

Work held between centers on expanding mandrels is not so often encountered on milling machines as in years past. This is largely because such work is often processed on automatic machines. However, many odd jobs of this kind are still encountered; therefore the expanding mandrel definitely has a place. The mandrel acts as an internal chuck for holding workpieces with holes. Such mandrels might seem expensive as against solid arbors. But where quantities are large they cost less than solid arbors.

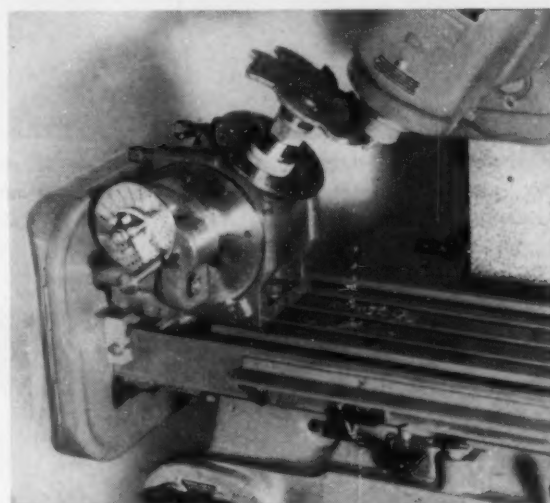
#### Index centers save time

Workpieces may be placed on such mandrels in a position most convenient for the operation to be performed. A workpiece can be located so it projects over the end of mandrel jaws, thus allowing cutting tools to face or otherwise cut past the edge of a bore. Many expanding mandrels need not be forced in or out of work with an arbor press. A light tap with a soft hammer is the only thing necessary to drive the mandrel tight, or to release it. Used in connection with index centers they are often found to be time savers.

An adjustable spacing collar of micrometer type is designed for accurate spacing of side

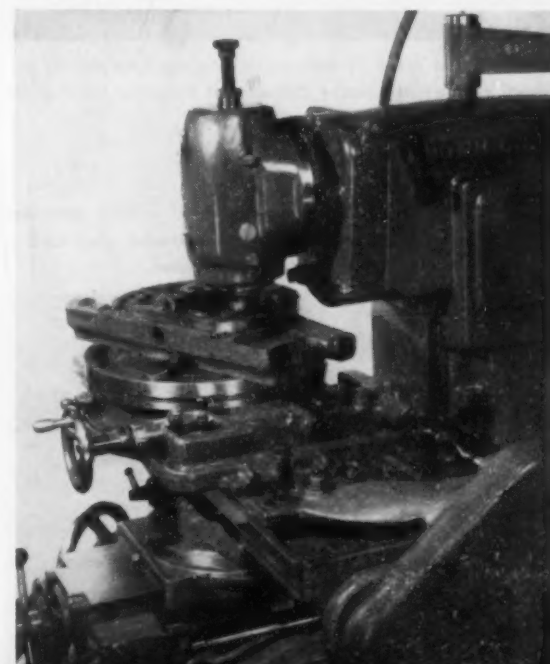


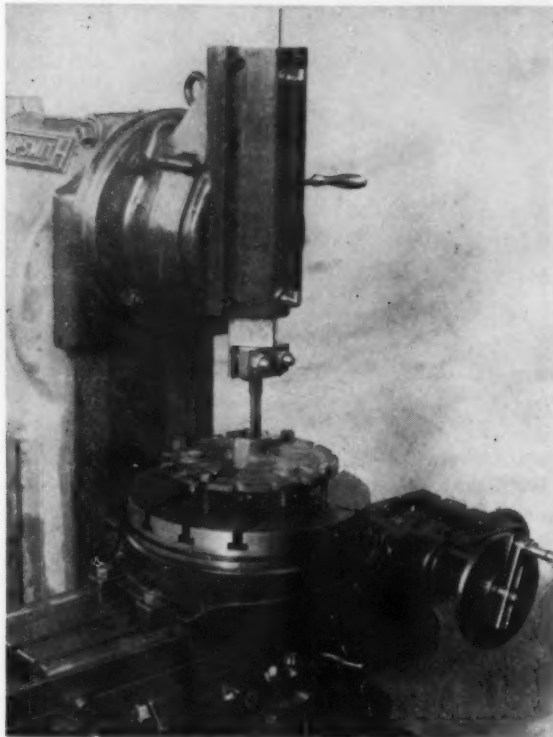
UNIVERSAL milling attachment mounted on overarm of a standard milling machine. Operator is using it in milling a special die punch. Attachment has adjustable speeds.



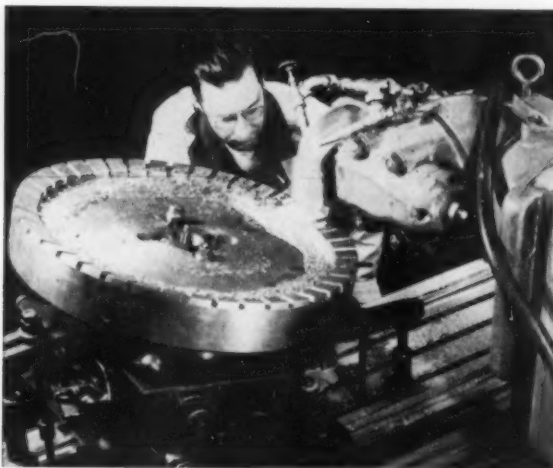
VERTICAL milling attachment, swivelled to side, being used with power-driven spiral index head for the milling of constant-rise lobes on a radial cam.

COMBINATION of vertical milling attachment and power-driven circular milling attachment on table, enables this standard machine to mill circular slot in this workpiece.





**SLOTING ATTACHMENT**, used in combination with indexing circular attachment, being used in this case to slot out a hexagonal hole in the workpiece.



**TOOLROOM** setup of ordinary milling machine utilizes universal milling attachment and special fixture in slotting the body of a 24-in. face mill.

**SPECIAL** attachments may be added to milling machines for rack milling. Work is held in a special vise, and a specially-designed cutting head is attached.



## **You can get more versatility with these attachments . . .**

milling cutters, gang milling, and other multiple setups on milling machine arbors.

After the original setups have been made, and the trial cut is measured, the correct plus or minus adjustment is easily made by loosening the cutter arbor nut and adjusting the special collar. Such spacing collars are calibrated in thousandths of an inch, but an adjustment of a quarter-thousandth can easily be made by visual calibration.

There is sometimes occasion for application of flywheels to milling machine arbors. Some are designed for mounting directly to the spindle for use with National Standard shell end face mills. Others are for use with bolt-on face milling cutters. Still others are for through-arbor mounting, so that one flywheel may be made to fit a variety of milling arbors by means of interchangeable bushings.

### **Add another flywheel**

Flywheels are highly efficient in smoothing out cutting action, especially where an intermittent cut is involved. Where length of cut is not too great, it is possible to take a much greater depth of cut than would be possible without a flywheel, due to momentum. Many milling machines are made today with built-in flywheels. But these are often so far away from the actual mounting of the cutter that full effect of the flywheel is not obtained. In many cases, it is profitable to add another flywheel which runs nearer to the actual cut.

In general, manufacturers recommend that a wheel be not less than 4 in. greater in diam than the cutter with which it is to be run. The larger the flywheel, the better will be the effect obtained.

For a milling machine with a mongrel spindle, a suitable wheel can be obtained that will adapt the machine to a standard spindle mounting. This not only provides the advantage of flywheel action, but also provides a new spindle nose more adapted to the majority of cutting tools now being used. Use of flywheels is particularly advantageous with carbide cutters.

There are cases where dividing heads and quick-change adapters work together to a high degree of advantage. A highspeed universal milling attachment can be used to advantage with a swivel-type dividing head, for milling radial cams and many other types of irregular outlines.

Since swivel-type dividing heads may be turned to hold the axis of a short workpiece in vertical position, they are useful for operations performed on ends of such pieces. They are used with vertical or universal milling attachments



holding suitable end mills. Swivel-type dividing heads may be fitted with a chuck for holding certain types of work, if desired. They will then hold, revolve and index such work to make cutting of multiple splines readily possible with slotting attachments.

In some cases, universal milling attachments are provided with five different changes of speed for their spindle through a step-cone V-belt arrangement, and with a traveling quill. This quill has axial travel of  $1\frac{1}{2}$  in. and has a special feed mechanism which gives an operator a sensitive feel of cutting on smaller end mills.

Horizontal slotting jobs are fairly common, since most slotting attachments may be turned with their toolslide to horizontal travel. Universal milling attachments and universal spiral index centers team up well for such work as milling helical gears. Cycle-type milling machines often make particularly advantageous use of vertical and universal milling attachments.

### Special mounts for milling cutters

One interesting application is accurate milling of constant-rise lobes on radial cams. This is often encountered on screw machine and other radial cams. With a vertical milling attachment which can be swiveled to right or to left, and a swivel type power dividing head, the job is quite simple. A milling cutter is mounted in the spindle of the milling attachment, the side of the cutter to do finish milling on the edge of the cam lobe. The spindle of the milling attachment is set at a departure from vertical which matches departure from vertical of the swivel-type spindle on the index head. Thus, the axes of the index head spindle and the milling attachment spindle are parallel.

### Circular milling attachments handy

The dividing head spindle is operated from the machine lead screw, in the same manner as when spiral milling is being accomplished with power feed. Change gears employed for transmitting rotation to the dividing head spindle are selected in accordance with the value of constant rise required on the cam lobe. As the cam lobe revolves past the milling cutter, and recedes from the side of the cutter at a uniform rate, nothing other than a constant rise can be milled on the lobe.

Circular milling attachments are used to high advantage in combination with other attachments. Swivel vises also play their part in making possible different complex cuts with different milling machine attachments. Because circular milling attachments may readily be used for indexing, it is easily possible to use them in connection with a slotting attachment for machining square and hexagonal holes.

Special grinding attachments are readily applied to standard knee type milling machines. Many of these incorporate their own driving motor. They are highly useful in grinding dies,

mounted atop circular milling attachments. With a die so mounted, the operator can revolve, raise, lower or move it either longitudinally or transversely.

Various milling machine attachments are quite heavy. Often an auxiliary crane is mounted on the milling machine for handling the attachment when it is being mounted or dismounted. In many cases, an attachment can be swung to one side and left suspended directly on the crane until it is again needed.

Cutting rack teeth is often done on a milling machine. Because many racks are quite long, it is expedient to hold them in a vise-type fixture along the milling machine table. The machine cross feed and a special rack-milling attachment does the actual milling.

A special fixture or vise, particularly designed for handling long rectangular work, is used for holding racks being milled. Usually, when a rack milling attachment is in use, a rack-indexing attachment is also employed. This is connected to the feed screw at the end of the table, and is made up of an indexing and locking plate with change gears.

Different combinations of gears may be used to allow the table to be moved longitudinally in increments to correspond to the pitch of the rack desired. The table is moved one increment by making either a half turn or a complete turn of the indexing plate. For change-gear combinations requiring a complete turn of the indexing plate, provision is made to close one of the slots, thus guarding against error and spoiling of workpieces.

This concludes the series on milling machine attachments.



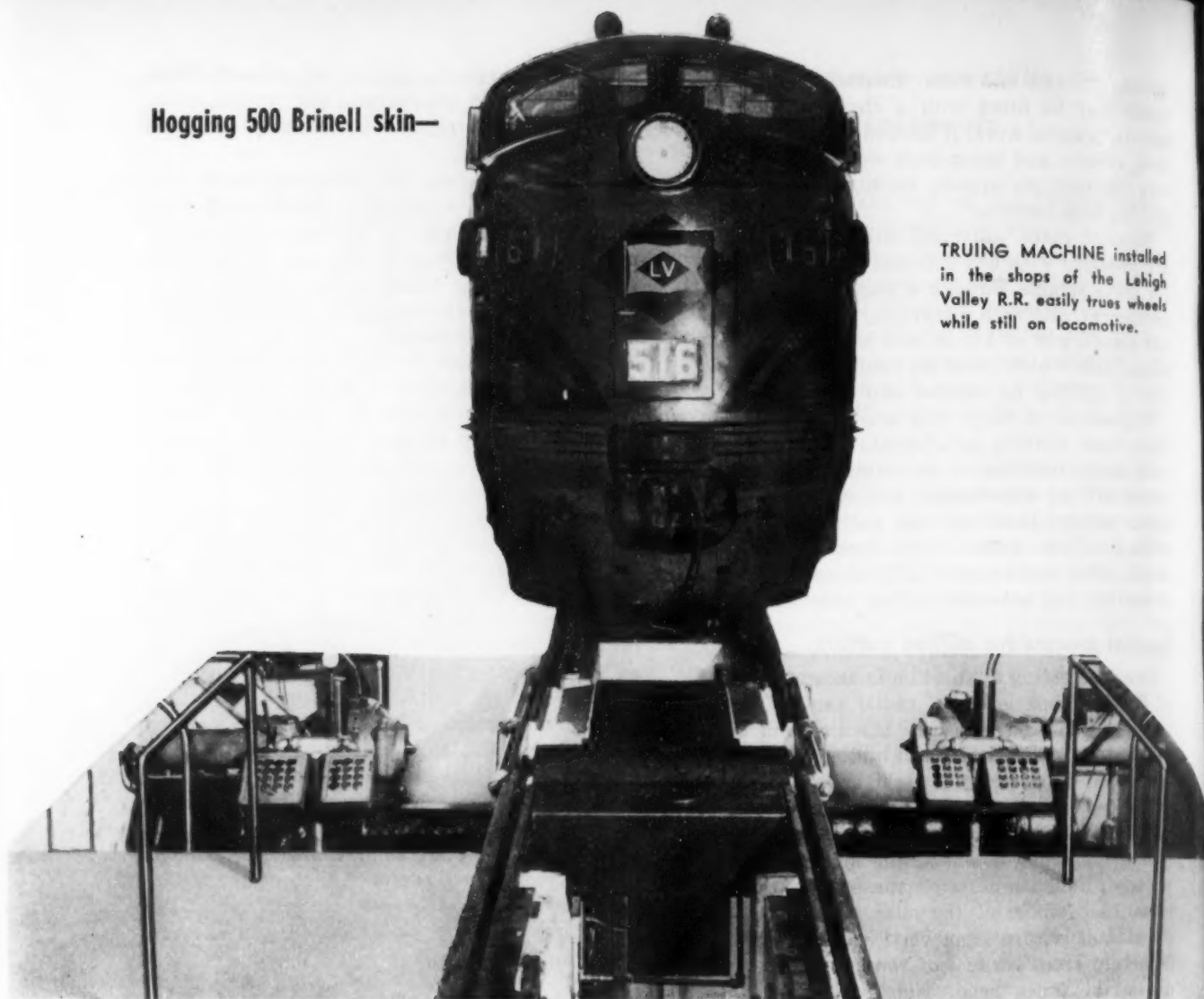
### OTHER ARTICLES IN THIS SERIES

April 24, 1952, p. 142. Indexing heads, special centers, duplicating attachments, fixtures.

May 1, 1952, p. 148. Indexing fixtures, arbor accessories, cam milling attachments.

May 22, 1952, p. 130. Table positioning equipment, preset cutting tools, tilting heads, slotting attachments.

Hogging 500 Brinell skin—



TRUING MACHINE installed in the shops of the Lehigh Valley R.R. easily trues wheels while still on locomotive.

## Carbide Cutters SPEED WHEEL TRUING

Costs of truing locomotive wheels have been cut way down with this new truing machine made by Standard Railway Equipment Mfg. Co. Heart of the machine is a pair of special solid body cutters. Each has 10 inserted blades carrying 11 cylindrical carbide buttons. When the carbide buttons dull under the 500 Bhn work hardened wheel surfaces, a new cutting edge can be turned into place. Wheels are trued without being removed. Four pairs of wheels can be turned by inserts before indexing. Cuts of  $\frac{1}{4}$  to  $\frac{5}{16}$  in. are taken at 108 rpm. Only 19 min are needed to turn a pair of 40-in. wheels.



By A. Zamis  
Chief Engineer  
Illinois Tool Works  
Chicago

Maintenance of railroad locomotive and car wheels to standard requirements of shape and contour has always been a major problem in railroad shops. First, equipment had to be tied up for a considerable period while the wheels were removed for machining, adding an appreciable revenue loss to the actual cost of a time-consuming job. Second, the wear surface of the

wheels is work hardened to more than 500 Bhn by thousands of miles of high speed service, making machining of these surfaces extremely difficult.

In some cases heavier cuts than actually required for truing had to be taken to get through this work hardened surface. The number of times a wheel could be trued before it was rejected as undersize was consequently reduced and service life considerably shortened.

In 1946, Standard Railway Equipment Mfg. Co., Chicago, sought a solution to this problem. The answer was the new Standard Wheel Truing Machine, now in use in a number of railroad shops and on order for many more.

Essentially, this new machine trues the wheels accurately about their own axle as a center without removing them from the locomotive or car. The unit is housed in a pit beneath the track. The car or locomotive is rolled over it. The machine is raised to engage the pair of wheels to be trued and a section of track that permitted the locomotive to roll into place is removed. Both wheels of a pair are turned simultaneously to the same size, true around their own axle and the truck assembly is undisturbed. Opening the journal-box covers is the only preparatory operation involved.

Development of this machine, a difficult project because of the weight of the rolling stock itself and the need for a method of driving the pair of wheels to be trued, solved the first part of the problem. Locomotive and car wheels could now be trued without tying up equipment for extended periods of time and with far fewer operations.

But the second part of the problem, a cutting tool problem presented by the work hardened surface of the wheels themselves, still remained to be solved before the machine could be practically applied.

To reduce machining time the machine was designed to employ rotary form milling cutters. The nature of the material being cut indicated

the use of carbide and so the first set of cutters was designed with special shaped carbide inserts set into a solid cutter body.

In trial runs, this first set of cutters proved unsatisfactory. Excessive tool maintenance requirements greatly reduced the production advantage of the machine itself. Only one or two pairs of wheels could be turned before costly regrinding or carbide insert replacement was required.

Next a cutter consisting of a series of carbide tipped insert rings built up on an arbor was designed and tested. Once again original tool costs and maintenance requirements made the set-up impractical. The cutting tool problem threatened to stymie development of the entire process.

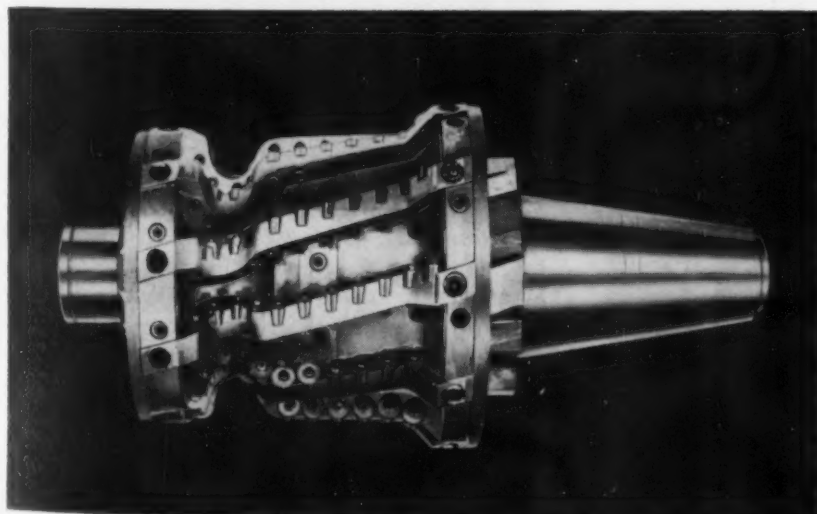
After months of research and experimentation a completely new cutter idea took shape. And with it came a new problem. Could this special cutter be produced economically?

Standard Railway Equipment Mfg. Co. took the problem to Illinois Tool Works, Chicago. A new type form milling cutter was developed that met all the requirements of the job as well as low maintenance and carbide economy.

#### **Each cutter has 110 carbide inserts**

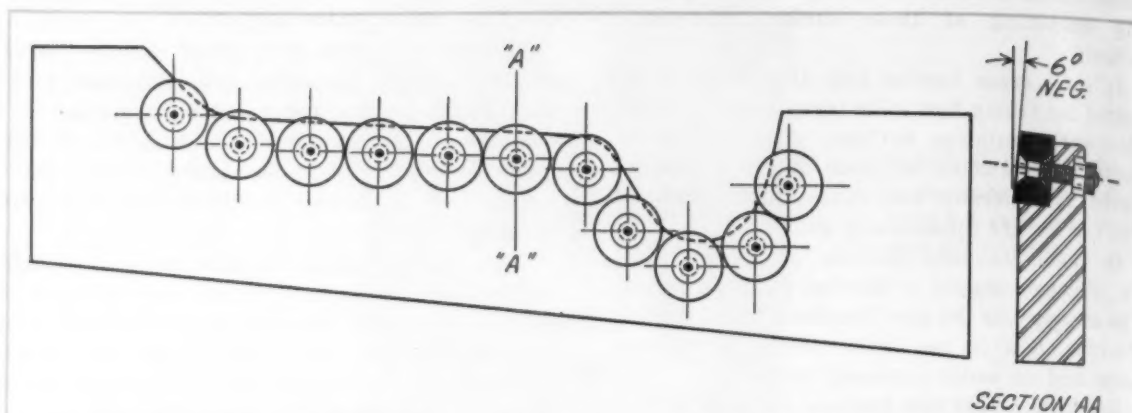
Each cutter (right and left hand to a pair so that both wheels on an axle can be trued simultaneously) consists of a solid cutter body with ten inserted blades carrying 11 cylindrical carbide button inserts each. When assembled, the 110 carbide inserts are arranged on a fine pitch helix. As the tool is rotated, this helical arrangement generates the exact profile desired on the finished wheel and distributes the actual cutting load equally over all the cutting edges.

Principle feature of the new tool lies in the fact that the carbide insert buttons may be indexed! Each button actually cuts on only a small segment of its periphery and as the edge becomes dull, it is rotated to a new position. In normal operation, each button can be indexed to



SPECIAL FORM cutters developed to handle truing job have 10 inserts, each carrying 11 carbide buttons. Buttons may be indexed. Cutters developed by Illinois Tool Works.





DRAWING SHOWS how individual carbide insert buttons are mounted in individual cutter blades to permit indexing. Variation of the insert positions on successive blades in the cutter places all inserts on a helix to generate profile.

at least eight positions and then turned end for end and indexed eight more times!

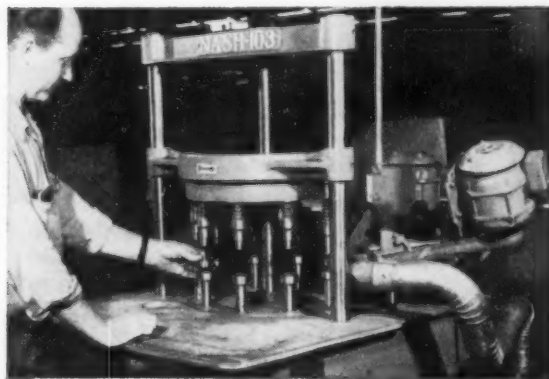
Thus, with actual tests indicating that four pairs of wheels can be trued before the carbide buttons require indexing, 64 pairs of wheels are turned by one set of carbide inserts. When replacement is required, the carbide inserts are simply bolted in place in the removable blades of the cutter. The solid backing of carbide inserts to minimize chipping or breaking.

Cuts of  $\frac{1}{4}$  to  $\frac{5}{16}$  in. are taken in the extremely hard wheel surface at a cutter speed of 108 rpm to complete the truing operation in one turn of the wheel in most cases—requiring only 19 min for a pair of 40 in. wheels. The new process removes less service metal and increases wheel life because the new tool cuts through the work hardened surface rather than under it. No more than the actual amount of material to restore the wheel to proper contour is removed.

## VERTICAL GRINDER cuts cost on shell parts

Cost of deburring Ordnance shell parts has been cut by 30¢ per 100 and quality improved with a unique automatic horizontal belt grinding machine at the Badger Meter Mfg. Co., Brown Deer, Wis., a suburb of Milwaukee.

At this newly-built plant the shell parts—mostly 1137 cold rolled steel—are manually fed to a turntable and rotated as they pass a horizontal abrasive belt.



AUTOMATIC FLASH LATHE equipped with three horizontal abrasive belts has cut grinding costs by 30¢ per 100 at Badger Meter Mfg. Co. Output is 950 pieces per hr vs. 375 for conventional manual vertical grinder.

According to Harold Alberts, plant superintendent, one operator on the new horizontal grinder can turn out about 950 pieces per hr, compared to 375 per hr on the conventional manual vertical sanders previously used.

The horizontal grinder does the work of four conventional vertical belt grinders because of the higher production rate, less belt changing time, and considerably fewer reruns. Extra workers and machines are thus freed for other duties in the plant.

The machine is basically an automatic flash lathe made by J. M. Nash Co., Milwaukee. This type machine has normally been used for removal of flash on circular moldings and turned parts. To meet Badger's special requirements three  $\frac{1}{2}$ -hp 3450-rpm motors were mounted vertically as shown, each driving a belt which hits the rotating part at a slightly different angle. This arrangement effects additional savings in belt life over the vertical grinder, since 1500 parts can be run before a belt change is necessary. The vertical grinders required belt changes after 500. From a cost standpoint, the reduction in changes is more important than the cost of the belts. The machine is also applicable to variety of other shell components and techniques.

# NEW equipment

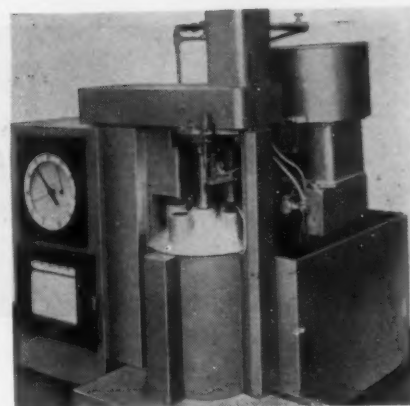
New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 137 or 138.

## Controller tests and records sand properties

The sand controller is an automatic sand testing unit that determines and records the permeability, green strength, green deformation and temperature of molding sand. It will add the correct amount of water to the sand in a mixer so that the sand is correctly tempered. The unit may be placed adjacent to and synchronized with the sand mixing equipment or sand conveyer belt in the foundry. It

does not require attention by an operator, but automatically performs its tasks without manual manipulations. Rate of testing may be selected at the fastest rate of 15 sec per sample to one test every 6 min. Continuous record of sand properties is had for each day of operation; off periods are easily detected. Controller requires 33x21-in. space. *Harry W. Dietert Co.*

For more data circle No. 17 on postcard, p. 137.



## Grinder produces flat surfaces on metal parts

Grinding principle employed in a new type surface grinding machine consists of a cylinder-type grinding wheel mounted in a vertical plane and recessed within the actual work surface of the grinding table. A 12-in. diam cylinder type grinding wheel permits the finishing of surfaces 9½ in. wide and parts can be of any reasonable length or height. Speed is possible

as workpieces are simply passed across the face of the grinding wheel. Stock removal is regulated by a positive feed control governing the depth of cut for various classes of work. Equipment includes dust removal system for dry grinding; coolant system for wet grinding operations. *PDQ Grinder Co.*

For more data circle No. 18 on postcard, p. 137.



## Rolling fixture indicates errors of work gears

Errors in size and eccentricity of work gears are indicated by a new gear rolling fixture. The adjustable workhead is set at precise center distance from the master gear spindle carried on a floating spring-loaded slide. This is usually done with precision gage disks. When the work gear is rolled in mesh with the master gear the errors are read directly on a dial indicator actuated by any movement of the

master gear slide. Column type workhead assures maximum rigidity. Upper center that is counterbalanced facilitates quick setup. Fixture is spring-loaded for easy loading and unloading. Knob on right of the column raises or lowers the center slide. That on left locks it in place. *National Broach & Machine Co.*

For more data circle No. 19 on postcard, p. 137.

Turn Page



## New Equipment

Continued

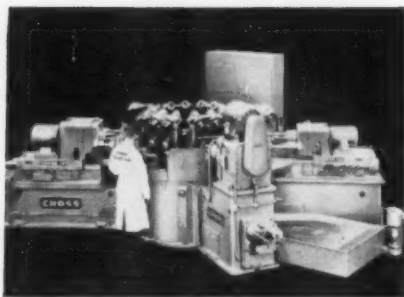


### Precision lathes with 1, 1/2-in collet capacities

Several refinements of design and construction have been incorporated in two series of Clausing 12-in. precision lathes. The 6300 series features forged, ground steel spindle, with 1-in. collet capacity, A.S.A.—L-00 tapered key drive nose; out-board drive with dual A-belts driving the spindle pulley; and choice of countershaft or variable speed drive. Series 4800 has threaded

spindle with 1/2 in. collet capacity. Built-in countershaft has friction-clutch and brake. Both series have Timken tapered roller bearing equipped spindles; thick bed with two V-ways and two flat ways precision ground. Specifications: 24, 36 and 48-in. between centers; 12 3/4-in. swing over bed, 7 1/2 in. over saddle. *Clausing Div., Atlas Press Co.*

For more data circle No. 20 on postcard, p. 137.

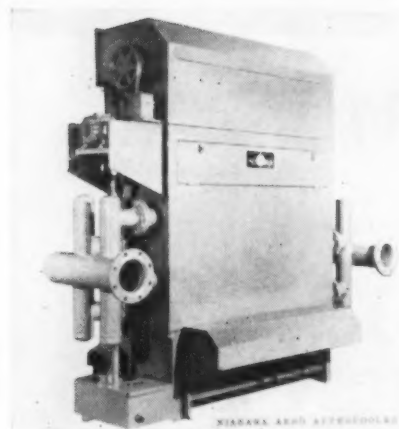


### Production of tank parts speeded up

Working on cast armor, 35 Rc hardness, a new special machine drills, chamfers and taps four holes and drills, chamfers and reams one hole in tank intermediate and rear wheel arms. Production of 64 pieces per hr is possible. Of these, 32 are right and 32 left

hand arms. A duplex work holding fixture holds one right and one left hand part in each station. The machine is a six station power operated, dial index, table type. The table is rotated by a fluid motor drive. *Cross Co.*

For more data circle No. 21 on postcard, p. 137.



### Increased capacity features after cooler

Cooling in the Aero after cooler, for compressed air or gases, is done by the evaporation of recirculating water sprays on the surface of tubes through which the compressed air passes. Increased capacity is gained by improved distribution of the compressed air in the machine and an increase in the amount of evaporating surface. Tube sizes have been increased to reduce friction. Equipment is de-

signed for installation outdoors to provide cleaner compressed air and save space in industrial buildings. Freezing is prevented in winter by automatic control which shuts off freezing cold air from the spray chamber. Cooling medium is air at the atmospheric wet bulb temperature which is cooler than average temperature of surface cooling water. *Niagara Blower Co.*

For more data circle No. 22 on postcard, p. 137.

<p><b>WORLD'S FASTEST FLAW LOCATION</b></p> <p><b>TURCO</b> <small>TRADE MARK - PAT. PENDING</small></p> <p><b>dy✓chek chek-spek</b></p> <p><b>THE DYE PENETRANT METHODS</b></p>	<p><b>IT'S NEW! CHEK-SPEK</b></p> <p>HERE'S TURCO'S NEW PRODUCTION-LINE METHOD OF FLAW LOCATION...SIMPLE, SAFE &amp; ACCURATE. SAVES YOU MONEY &amp; TIME!</p>	<p>DEVELOPED FROM TURCO'S FLEXIBLE DY-CHEK PROCESS. ACCEPTED BY THE AIR FORCE... AND BY THE NAVY</p>	<p><b>WELDING FOREMEN STATE</b></p> <p>LASTING VISIBILITY OF FLAW INDICATIONS PERMITS ECONOMICAL RE-WORKING AT YOUR CONVENIENCE.</p>	<p><b>RE-WORK WELDERS SAY</b></p> <p>MAKES EACH JOB EASIER BECAUSE WE CAN SEE WHERE THE DEFECTS ARE!</p>
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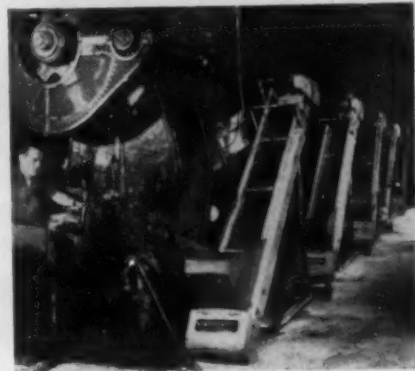


## Press-Tenders step up production

Between-operation handling effects high production press operation as illustrated by a twin-line press installation in operation at Toledo Stamping & Mfg. Co. which reportedly increased production 10 pct. Parts from each press are automatically and continuously fed to the next press by Press-Tenders, portable conveyers that elevate and

convey the parts to the next operation. The Press-Tender is a small, cleated conveyer belt, self-powered and readily adjustable to various loading and unloading heights. It is made in 6 and 8 ft models with 8, 12 and 16-in. wide, 4-ply cotton belt having cleats 1 in. high every 24 in. *E. W. Buschman Co.*

For more data circle No. 23 on postcard, p. 137.

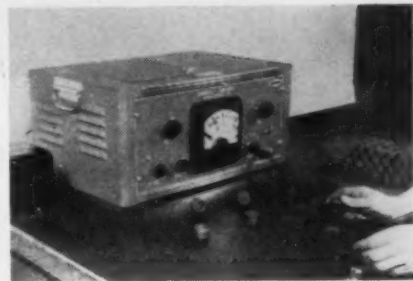


## Metals comparator improves quality control

A metals comparator used at a large automotive manufacturer plant has reduced testing costs and provided better quality control in the production of truck universal trunnion yoke bearings. Comparator includes an electronic unit mounted in a steel cabinet and a test coil

set into a work bench. Dial on the unit is set from a known sample, and as each untested bearing comes down the line, it is inserted into the coil. Dial indicates whether or not the part meets specifications. *General Electric Co.*

For more data circle No. 24 on postcard, p. 137.



## Belt grinding possible with portable tools

Portable grinding is the result of a new attachment which permits the use of abrasive belts on straight spindle air and electric portable tools. Made from lightweight aluminum castings, the attachment consists of an idler pulley, the supporting mechanism, and a contact wheel; the latter being mounted on the tool spindle. Contact wheel is a small-sized version of the serrated 61 wheel by Carborundum. The unit is attached by a split bracket

to the casing of the tool where grinding wheel guards are normally mounted. Bracket makes the attachment adaptable to almost any portable tool of the proper speed and type. In field tests of two models, maintenance of tool spindle speeds proved to be an important factor in achieving highest metal removal efficiency and maximum abrasive belt life. *Carborundum Co.*

For more data circle No. 25 on postcard, p. 137.

Turn Page



**CHIEF INSPECTORS REPORT**  
KEEPS ACCEPTABLE  
PARTS MOVING...ONLY  
SUSPECTED PARTS GO  
TO TRAINED INSPECTORS.  
SIMPLIFIES EVALUATION,  
CUTS DEPARTMENT  
COSTS.



**PRODUCTION SUPTS. SAY**  
ELIMINATES INSPECTION  
BOTTLENECKS. PERMITS  
ONE MAN TO CHECK AS  
MANY PARTS PER HOUR  
AS HE CAN PICK UP  
AND PUT DOWN!



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TIME. PERMITS IN-  
PROGRESS INSPECTIONS.  
AN EXCELLENT RECEIVING  
DEPARTMENT TOOL.  
YOUR PEOPLE  
WILL LIKE  
IT!



**Turco Products, Inc., Dept. 103**  
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Los Angeles 1, Calif.

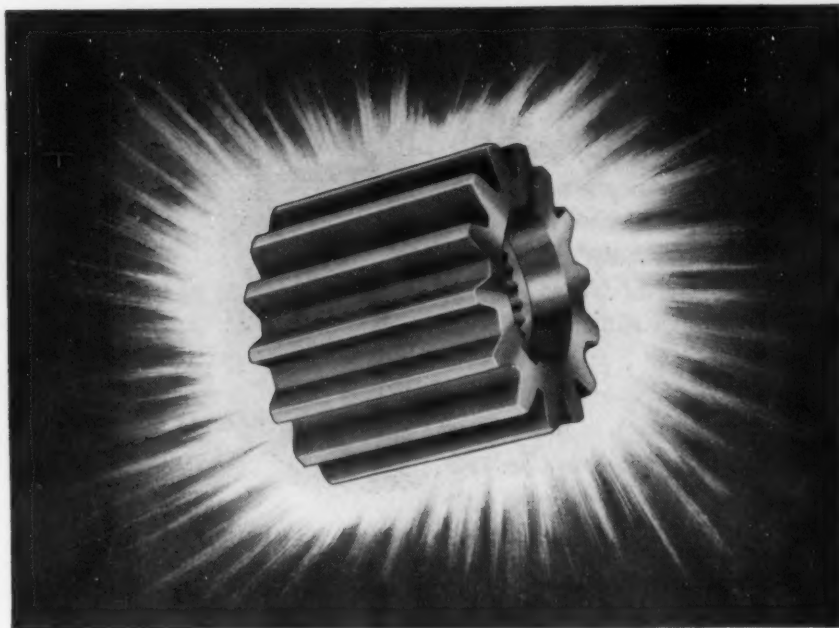
Gentlemen:

Please send me your latest information on the world's fastest flaw location methods—flexible ☐ Dy-Chek, or the production-line tool ☐ Check-Spek, (check one or both). No obligation, of course.

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Increasing gear life may be a real problem for you but it's our business. It is something we do by combining design, metal, and machining with a special heat-treating process and experience we have gained making quality gears since 1914.

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Your  
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of  
Longer Life



## New Equipment

Continued

### Fast-baking core oil

Jetbond 300 for use in foundries cuts baking time 1/3 to 1/2 and has a wide safe baking range without danger of overbake at higher temperature. Collapsibility of the cores produced is said to be excellent, cutting shake-out time and cleaning costs. Irritating gas and smoke are reduced. The oil works clean in core boxes and blowers and no kerosene, fuel oil or release agent is required. *Swan-Finch Oil Corp.*

For more data circle No. 26 on postcard, p. 137.

### Wet-blast finishing

Special abrasives suspended in water, applied by air pressure, is the operational procedure of a new abrasive wet-blast machine that produces refined finishes on production tools. Metal removal is said to be negligible, retaining all close tolerances on accurately machined tooling. *Abrasive Wet-Blast, Inc.*

For more data circle No. 27 on postcard, p. 137.

### Trouble spotter

Maintenance and inspection departments may find the new Electro-Probe helpful in detecting and diagnosing trouble developing in running motors or machines before failure occurs. After a reading has been established for an acceptable part or assembly, others off the production line can be quickly passed or rejected on comparative readings. The Electro-Probe incorporates a pick-up probe and three-stage amplifier, is super-sensitive to vibrations at point of contact but unaffected by airborne noises. *Erwood, Inc.*

For more data circle No. 28 on postcard, p. 137.





### Air filter

When air-borne toxic or radioactive particles are a threat to health or production or research processes, the Ultra-Aire space filter will trap them. Developed originally to remove radioactive contaminants from air exhausted during atomic energy processes, the filter is now available for industrial and laboratory use. It offers 46,000 sq in. of filter media in the 1000 cfm size; is available in air flow sizes 50, 500 and 1000 cfm. *Mine Safety Appliances Co.*

For more data circle No. 29 on postcard, p. 137.

### Cuts work glove costs

Plastic dots permanently set into 10-oz canton flannel make a new work glove outlast conventional canton flannel gloves of this type by two-to-one, it is claimed. Twice the abrasive wear results in a savings of 40 pct to industrial users of the gloves. The new product retains all the lightness, flexibility and comfort found in regular canton flannel gloves. *Riegel Textile Corp.*

For more data circle No. 30 on postcard, p. 137.

### Pancake head screw

New thread-cutting screw features a combination pancake-hexagon head ideal for molding into rubber. Its special spaced threads, together with enlarged thread-cutting slot, provide low driving torque for easy driving in plastic. *Shakeproof, Inc.*

For more data circle No. 31 on postcard, p. 137.  
*Turn Page*

## STAR DIE-STEEL PERFORMERS

### SUPERDIE

High Carbon,  
High Chrome,  
Oil Hardening

### ATMODIE

High Carbon,  
High Chrome,  
Air Hardening

### OILDIE

Non-Deforming  
Extra Quality

### EXL-DIE

Standard  
Non-Deforming

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There are Columbia warehouses and highly trained Columbia representatives in principal cities. For service, for quality, look to Columbia — producers of fine tool steel by the electric process.

**COLUMBIA** TOOL STEEL COMPANY

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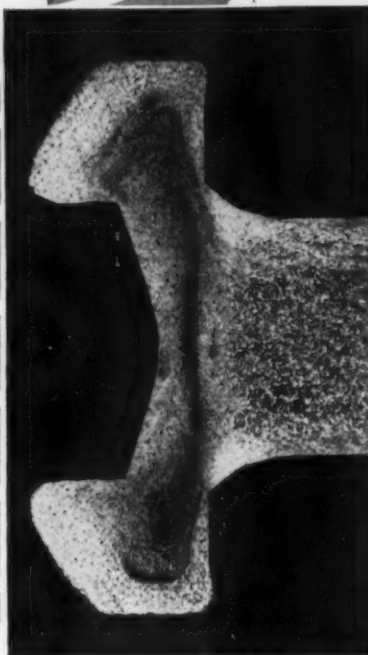
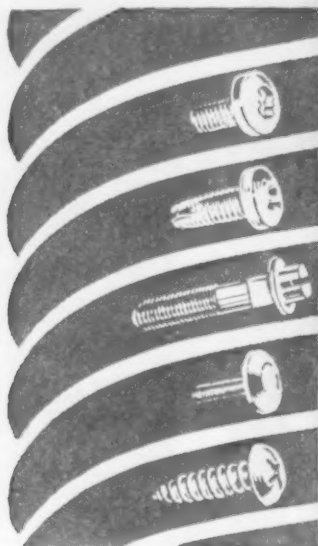


*Flows without a flaw...*

## KEYSTONE

"SPECIAL PROCESSED"

### COLD HEADING WIRE



The drastic displacement of metal during the cold heading of recessed clutch head screws requires special wire that will flow with unbroken fibres. The above macrograph clearly indicates long, unbroken flow lines in a clutch pan-head screw made from Keystone "Special Processed" Cold Heading Wire.

Carefully selected ingredients—our own exclusive drawing and heat treating process—rigid quality controls and inspections—give Keystone "Special Processed" Wire unsurpassed performance in unusually difficult cold heading problems.

**INDUSTRIAL WIRE SPECIALISTS**

**Keystone Steel & Wire Company**  
PEORIA 7, ILLINOIS



## New Equipment

Continued

### Metal joining

EB silver brazing alloy is intended for use in brazing chromium carbide, cast carbides and other hard-to-wet carbides. Results are claimed also on tungsten-copper alloy, cermets and other refractory alloys difficult to braze. The new alloy is composed of 57 pct silver, the balance includes copper, manganese and tin. Melting point is 1120°F and flow point, 1345°F. No volatile elements are in this alloy; it is non-susceptible to dezincification type of corrosion. *Handy & Harman.*

For more data circle No. 32 on postcard, p. 137.

### Galvanizing compound

Galvalloy is a galvanizing coating material used by welders to replace the galvanizing that is burned off by the welder's torch. It bonds permanently to most metals without the use of flux or sandblasting, or cleaning. It can be used in salvaging parts. It will not burn off when rubbed on pre-heated surfaces. For easier use the bar has been reduced from 16 to 14 in. long. *Metalloy Products Co.*

For more data circle No. 33 on postcard, p. 137.

### One-hand operation

Redi-Flo, a new, fast-flowing dry chemical fire extinguisher, contains Dri-Kem, an improved dry chemical containing an additive which coats the powder particles and forms a water-resistant skin over each crystal. Redi-Flo has one-hand operation. Locking mechanism prevents accidental discharge but permits operator to place the unit in action swiftly with a single release-squeeze motion. *Stop-Fire, Inc.*

For more data circle No. 34 on postcard, p. 137.

### Full octagon hammers

Full octagon head of forged alloy steel is correctly heat treated and tempered for hardness and toughness. Claws are finely beveled to grip shank of nail or smallest brads. Straight-grained hickory handles are Evertite processed. *Stanley Tools.*

For more data circle No. 35 on postcard, p. 137.

## Maintenance coating

Neelum, a new high-solids liquid Neoprene solution, can be readily brushed and cured at ordinary temperatures to form a thick resilient protective film. It will produce a high quality coating of maximum thickness with a minimum amount of labor and is characterized by resistance to acids, alkalis, oils, sunlight and weathering. *Atlas Mineral Products Co.*

For more data circle No. 36 on postcard, p. 137.

## Chilling machine

Testing parts, instruments, etc., that must withstand effects of extreme cold, can be done in a compact industrial chilling machine suitable for testing procedures with requirements of  $-10^{\circ}$  to  $-80^{\circ}\text{F}$ . Model R-70 has chilling chamber 30 x 18 in. x 33 in. deep, with 22 sq ft of freezing surface. Thermal capacity is 800 Btu's per hr at  $-70^{\circ}\text{F}$ . *Sub-Zero Products.*

For more data circle No. 37 on postcard, p. 137.

## Tool saver

Stick-type wax lubricant for use in machining, sanding, grinding, polishing and forming operations reduces frictional heat generated between tool and work. It helps prevent scoring and loss of tool temper thereby preserving the working edges of a cutting or forming tool, extending life of the tool. Work finish is said to be improved. *DoAll Co.*

For more data circle No. 38 on postcard, p. 137.

## Pattern developer

Lengthy calculations, guesswork and troublesome pattern inventories are eliminated by a new tool for pattern making. The pattern developer provides a quick and practically automatic method of laying out patterns for any type of sheet metal transition fitting. The tool, of all-aluminum construction, is readily adjusted to various angles and lengths. Patterns can be laid out exactly without computations of any kind, and fittings are formed without buckling. *Jet Tool Co.*

For more data circle No. 39 on postcard, p. 137.

Engineering, production and economic advantages obtainable with forgings are presented in this Reference Book on forgings. Write for a copy.

## METAL QUALITY

A Reference Book on Forgings

● Attempts to gain the unusual mechanical and economic advantages of closed die forgings without using forgings seldom meet with success. There is no substitute for the combination of strength and toughness inherent in the compact fiber-like flow line structure of forgings. Consult a Forging Engineer about how you can obtain a correct combination of mechanical qualities in forgings for your particular type of equipment.

## DROP FORGING ASSOCIATION

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Please send 60-page booklet entitled "Metal Quality — How Hot Working Improves Properties of Metal", 1949 Edition.

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**REDUCES NEED FOR ANODIZING**

Simple chemical dip; immersion time only 10 seconds to 2 minutes; no sealing dip; color is clear or yellow depending upon your requirements; salt spray resistance equivalent to 20 to 30 minutes of anodizing, eliminates need for costly racks and electrical power.

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**Technical Briefs**

**Hot Radiography:**

X-ray photos of hot welds up to 1200° F made with new method.

A new method of "hot radiography" permits taking X-ray photographs of large pipes, valves, and similar units at temperatures as high as 1200° F. The McElroy-McNutt process has been successfully applied to inspection of partially completed welds on hot sections of pipe.

With ordinary radiographic methods, the pipe section must be cooled to about 100° F. With certain alloys, this cooling must be preceded by post-heating the weld to relieve internal stresses. Because of the lengthy cooling period involved, the usual practice has been to complete the weld before inspecting it.



**COOLING FLUID** circulates through hollow chambers of special film holder used to inspect partially-completed welds while the metal is still hot. Cooling system protects X-ray film emulsion from heat of weld.

**Saves Man Hours**—Hot radiography, recently described by Sam Tour & Co., Inc., makes it practical to interrupt the welding operation on hot pipe to inspect the weld root.

This technique saves many man-hours of heating and controlled cooling formerly required before the weld could be inspected. Also it is necessary to chip away only a partially-completed rather than a finished weld.

Used at a large eastern power plant, welding time on one job was cut from nine to three days.



ON MINNEAPOLIS-MOLINE'S UNI-HARVESTOR...

# SHAFT SIZE REDUCED from 1½" to 1¼"

BY USING HIGH-STRENGTH  
GROUND AND POLISHED

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The UNI-HARVESTOR is really different. It harvests grains, beans, and all seeds—it picks and husks corn, and bales or chops hay. Ground and Polished STRESSPROOF is specified for the cylinder shaft.

◆ In designing this Cylinder Shaft, Minneapolis-Moline engineers specified Ground and Polished STRESSPROOF to meet the increasingly severe operating conditions to which this equipment is subjected. The alternative would have been lower strength shafting with an increase in size. The larger shaft would have been 44% heavier, and bearings and gears would have had to be redesigned. Ground and Polished STRESSPROOF proved to be stronger, had better fatigue properties, and machined better. It eliminated heat-treating and straightening operations, and the size accuracy provided a correct bearing mounting.

STRESSPROOF makes a better part at lower cost.

STRESSPROOF is a severely cold-worked, furnace-treated, carbon steel bar with a unique combination of four qualities in the bar: (1) Strength, (2) Wearability, (3) Machinability, and (4) Minimum Warpage. Yet it costs less than other quality cold-finished steel bars. Available in cold-drawn or ground and polished finish.

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Ontario Malleable Iron Company, Ltd., Finds



## dustube® cleans everything ... but the pocketbook

Dustube dust removal is thorough. At Ontario Malleable Iron Company, Ltd., a Dustube is ventilating the extremely dusty operations of packing and unpacking pots in which hard iron castings are annealed. As the layers of sand and castings are added to the pots, a dust hood efficiently draws off all the dust. When sand and annealed castings are removed from the pots the Dustube also collects the heavy volume of dust created.

Results of this installation are very satisfactory. No dust escapes into the atmosphere, working conditions are excellent and this area of the foundry is exceptionally clean—in spite of the dusty nature of this operation. Two other Dustubes are used in the foundry to ventilate other operations.

Dustube removes all the dust. Yet the Dustube is not hard on the pocketbook. Ontario Malleable has found that maintenance and operating costs are exceedingly low. They, like other prominent foundries, have discovered, that, "It Pays To Own A Dustube."

If you want dust collection that is thorough yet low in cost, investigate the Dustube today. Write for full details.



View of the packing operation. Note there is no dust rising from this operation to hinder the operator.



The Dustube efficiently ventilates the very dusty shakeout operation which follows annealing.

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### Technical Briefs

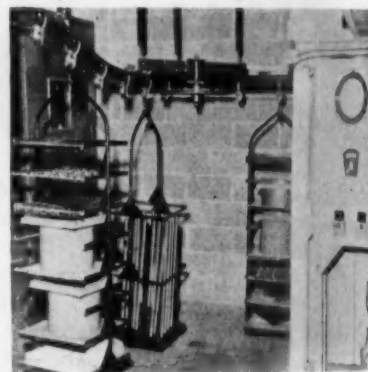
#### Parts Handling:

Production speeded, costs cut as conveyers replace carts.

Door chimes, ceiling heaters and ventilating fans are whizzing through the plant of Nutone, Inc., Cincinnati, and production has a new mellow tone since the company streamlined its parts handling system.

To level out production peaks and valleys, door chimes make up the greater portion of Nutone's production run during the last half of the year. But come January, production of ventilating fans and ceiling heaters goes into high gear.

**Large Volume**—Two 8-hr shifts can process 50,000 to 60,000 parts daily. This large volume presents a parts handling problem. In addition, four to six different types of units may be processed at the same time, each unit requiring a different color paint.



OUT OF THE OVEN parts move on way to stock or assembly. Elimination of tote boxes has increased available production area.

Product handling required efficient movement of parts in large volume; proper transit-speed of moving parts; and perfect timing in paint spraying and baking of dissimilar parts.

**Trucks Were Used**—The old method parts handling consisted of moving components from one operation to another on standard bakery type trucks. Jammed aisles and an excessive amount of production space and manual handling time resulted.

Working with Kirk and Blum Co. engineers, a universal overhead trolley cable conveyor system made by The E. W. Buschman Co., Cincinnati, was installed.

The 14-12-3 cable conveyor has pressed steel ball-bearing wheels for 80 lb capacity. Trolley castings are split and bolted to the 1/4-in. cable with an offset grip action so that there is no slip under load.



**PARTS MEET PAINT** as they are conveyed past this battery of spray booths on way to oven. All enamels and lacquers are baked same time in high temperature gas ovens.

**Overhead Storage** — Brackets and wheels are removable, independent of the casting bolts. Hooks are attached to the lower portion of the trolley. The track has hanger lugs welded on 6 ft 8 in. centers and permits bolting on vertical hangers and braces. Trolleys are spaced on 12-in. centers.

The conveyor system permits live working storage of parts. Overhead space is used by the conveyor, thus opening up additional production area.

The conveyor system made possible an increase of 50 pct in the number of paint spray booths. The operation is continual. Only one man is required to keep the conveyor system completely stocked.



"Must be one of those top secret 'burn before reading' letters from Washington."

a  
machine  
that's just  
your size

**8 WHEELABRATOR®  
TUMBLAST SIZES**

**give you a better fit of  
your cleaning problems**

The extensiveness of the Tumblast line makes it possible to select a machine that is just right to fit your needs. Size of castings to be handled and production requirements are the determining factors. Only with the *right* size machine can the highest cleaning efficiency be obtained. You need not be penalized with equipment that is too large or too small.

**just right to save you time** Pay loads in which individual pieces vary in weight from a fraction of an ounce up to thousands of pounds are cleaned in a matter of minutes. No other blast mill can match the production speed of the Tumblast.

**just right to save you labor** All Tumblasts utilize the perfected Airless Wheelabrator which throws more abrasive and throws it harder per horsepower expended than any other blasting device ever conceived. As a result, greater quantities of work are cleaned in less time at lower cost. Labor requirements are drastically reduced.

**just right to save you money** Because of its high-speed, thorough cleaning, the Wheelabrator Tumblast cuts cleaning costs to a rock-bottom low. Savings effected are ordinarily sufficient to amortize the entire investment in from 6 to 18 months.

**just write for catalog no. 254 for full details.**

**Complete exposure of work**

The exclusive endless belt tumbling method of the Tumblast completely exposes all surfaces of every piece to the abrasive blast.

**American** **Wheelabrator®**

**WHEELABRATOR & EQUIPMENT CORP.**

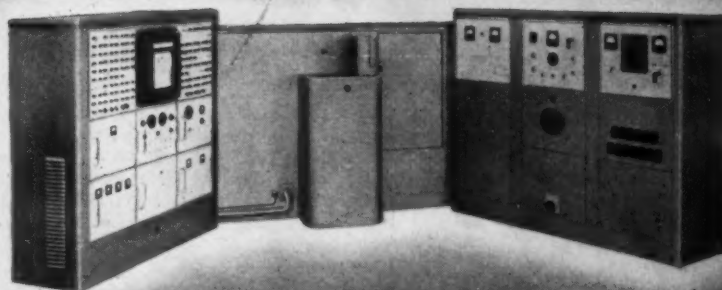
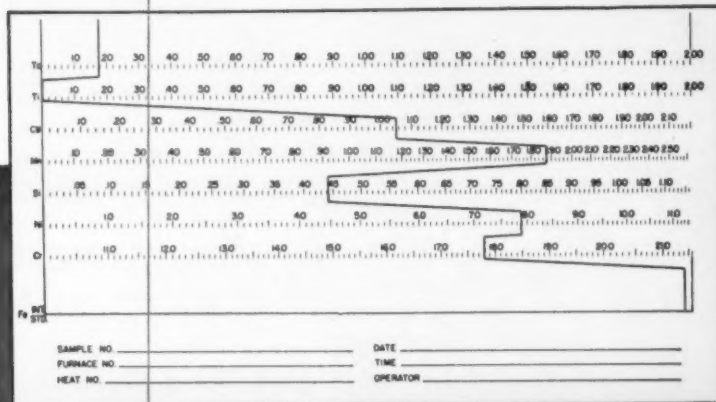
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**WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT**



## THE INSIDE STORY ON STAINLESS STEEL

Shown below is a multiple-copy graphic record of a typical stainless steel chemical analysis made on an ARL Production Control Quantometer.\* Accurate percentages of elements present in the alloy are recorded permanently in pen-and-ink in less than two minutes! And steel is only one of many metals and inorganic compounds which the unique ARL Quantometers are controlling daily as to routine chemical analysis in many types of industries.



### PRODUCTION CONTROL QUANTOMETER\*

... a multi-purpose, direct-reading instrument analyzing metals and other inorganic materials

The ARL Quantometer is extremely efficient, versatile and applicable to a wide variety of needs. Individual units are not limited to a single type of analysis, but can be designed to meet the requirements of many plant problems. As many as 25 elements as selected by the user can be accurately measured on the Production Control Quantometer—up to 20 simultaneously!

This instrument, pioneered and perfected by ARL engineers, is invaluable in helping to speed the production of critical materials and improving laboratory controls. It is the most advanced type of spectrometer yet developed and deserves your most serious consideration. Write for descriptive brochure.

THE ARL LINE ALSO INCLUDES 1.5 AND 2-METER SPECTROGRAPHS, PRECISION SOURCE UNITS, RAMAN SPECTROGRAPHS AND RELATED ACCESSORIES.



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## Technical Briefs

### Continuous Casting:

Nonferrous metals to be produced for machining, forging.

Continuous casting of aluminum and other nonferrous metals for production of bar stock for screw machine and forging operations has been undertaken by Apex Metal Products Corp., Cleveland.

The process, licensed under the Goss patents, involves no intermediate forming and represents the shortest possible distance from molten metal to the screw machine or forging hammer. Billets for extrusion and slabs for rolling can be cast by the new process.

**Used Rod or Bar**—Screw machine stock has usually been rod or bar, rolled, extruded, or drawn into the proper size and shape, and made from an alloy suitable for this operation.

Forging stock, due to the limitations of the rolling or extrusion process, has not always been made from an alloy most readily suitable to the forging process.

**Cast to Form** — By the Apex process the molten metal is cast directly into the form in which it is used and is made from the alloy most suitable to the machining or forging operation.

The wide range of alloy composition is one of the important advantages of the process. Inasmuch as no attention to the extruding, rolling, or other forming properties of the alloy is necessary, selection can be made primarily for strength, machinability, and corrosion resistance.

**Skips Heat Treatment** — Bars can be produced of Ternalloy, an aluminum alloy that develops high strengths without the necessity of expensive heat treatment. The alloy also machines more like free-turning brass than like aluminum and it has excellent corrosion resistance.

Blanks for forging can be cut from bars made this way. A pilot plant is now in operation which is producing certain shapes for test purposes. Full scale production is expected in the near future.

## Work Measurement:

Los Angeles companies found asking high work performance.

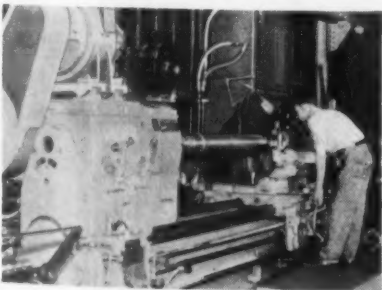
Los Angeles companies are asking workers for performance as high as or slightly higher than Eastern and Midwestern companies. Ralph M. Barnes and W. E. Carroll of the University of California have concluded from results of a recent work measurement project made in the Los Angeles area.

Performance level established by companies in the area is in most cases slightly lower than similar ratings made by companies in the East and Midwest areas, the report shows.

**Basis for Comparison**—Information provided by this survey enables each participating company to know in a general way whether it is establishing tighter or looser time standards than other companies in the Los Angeles area. The results of this study show whether the variation is due to a difference in allowances or to a difference in performance rating.

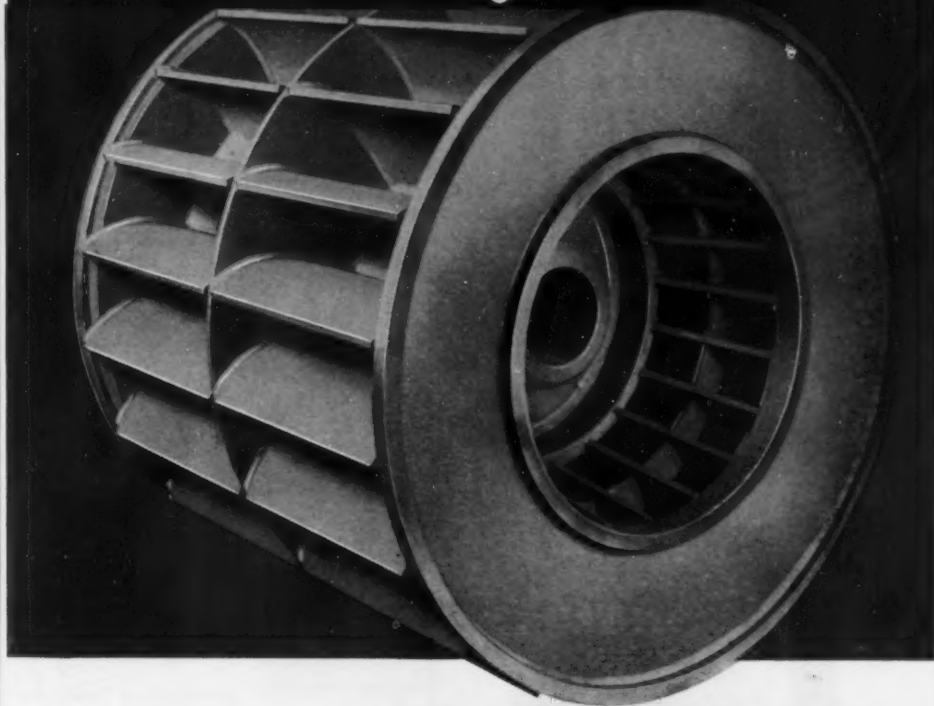
A considerable difference between lowest and highest performance rating, standard time, and allowances among the 33 companies that participated in the survey, was noted.

No significant difference between the "standard time" obtained from companies using time study as a basis for wage incentives and companies not using a time study as a basis for wage incentives.



MORE OUTPUT in less time was possible through installation of one of its own adjustable-speed, all-electric drive systems on big lathes at Reliance Electric & Engineering Co., Cleveland. Use of the variable speed drive units increases the number of speeds at which the lathe may be operated.

# use castings?



## WELDMENTS CAN SAVE YOU MONEY!

Acme weldments are replacing castings for leading machinery and equipment manufacturers everywhere because they do a better job at lower cost. Experienced Acme engineers at work with Acme's complete fabrication facilities can give you these same advantages . . . Acme's new 24-page, illustrated booklet shows you why. *The Facts about Weldments and Castings* tells you what you should know about their relative strength, rigidity, vibration, design flexibility, and cost . . . facts to help you specify and save. And it's yours for the asking . .

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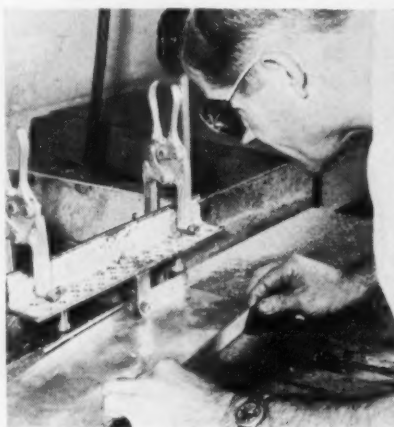
Monessen, Pa., Atlanta, Chicago, Denver, Detroit,  
Los Angeles, New York, Philadelphia,  
Portland, San Francisco, Bridgeport, Conn.

# Technical Briefs

## Fixture:

Trimming of sheetmetal frames  
made easier with simple tool.

One man can trim large contour  
frames in less time than was re-  
quired by two operators under  
previous methods by use of a spe-  
cial attachment for a Yates Amer-  
ican shaper.



SIMPLE FIXTURE developed at Temco Air-  
craft Corp. has simplified trimming of con-  
tour frames. Frames no longer need to be  
bolted to wood forms for trimming.

Developed by Floyd I. Wright of  
Temco Aircraft Corp., the attach-  
ment consists of three fiber rollers  
mounted on a section of angle iron.  
These hold the frames firmly  
against the cutter.

The entire assembly is secured  
to the guide angles of the shaper  
by two quick clamps. Frames no  
longer are bolted to wood forms  
for trimming, the operator's hands  
are kept away from the cutter.



"Bet you can't do that with X-ray  
inspection."



For DEPENDABLE SPRINGS  
small stampings — wire forms



ALL TYPES  
ALL SIZES  
ALL MATERIALS

For PROMPT SERVICE



LARGE  
ORDERS  
OR SMALL

For REASONABLE PRICES



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supply—large enough, ex-  
perienced enough and well  
equipped to handle promp-  
tly any requirement for me-  
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enough to want to do a good  
job for you. Your inquiries  
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Write, Wire or Phone...NOW!

Illinois Coil Spring Co.  
2100 N. Major Avenue  
Chicago 39, Illinois



## —Technical Briefs—

### Spring Balance:

Tungsten used to make simple, sensitive weighing device.

A tungsten spring balance recently developed has been found very convenient for accurate weighing of small quantities in a vacuum.

The device is highly sensitive, yet inexpensive and easily constructed. It should prove especially useful in those fields of research, such as textiles, where changes in weight with drying or absorption are of interest.

**Replaces Fuzed Quartz**—While helical spring balances of fuzed quartz have been employed for some time in vacuum weighing, they have not been entirely satisfactory. Because of the low internal friction of quartz, the damping force is very small.

Thus, when a quartz balance is once disturbed in a high vacuum, it may take several hours for the spring to come to rest. Quartz springs are also very fragile; this causes considerable loss of time in calibration due to frequent breakage.

**Simply Made**—The tungsten spring, on the other hand, comes to rest 10 or 15 minutes after a disturbance and is very simply prepared by winding some inexpensive tungsten wire of the proper gage on a mandrel. The spring, housed in an evacuated Pyrex tube, was developed by Dr. S. L. Madorsky.

The balance constructed at NBS consists of 23 turns of 3-mil tungsten wire, each turn having a diameter of about 1.1 centimeters. The spring is enclosed in an evacuated Pyrex tube and is suspended from a Pyrex rod attached to a ball joint at the top of the tube.

It was found that elastic creep causes a newly constructed tungsten spring to stretch continuously under a constant load for many days at a diminishing rate. This stretching becomes imperceptible after about 30 days.

June 12, 1952

# UNITCAST

*Works with Industry!*

 <b>OIL RE-DESIGNED</b>	 <b>MILITARY Original Design</b>	 <b>FARM IMPLEMENT RE-DESIGNED</b>	 <b>AIRCRAFT Original Design</b>	 <b>CONSTRUCTION RE-DESIGNED</b>
 <b>TRANSPORTATION RE-DESIGNED</b>	 <b>MINING RE-DESIGNED</b>	 <b>MACH. TOOL Original Design</b>		

**COMPLETE  
ENGINEERING  
STAFF**  
at your service  
● METALLURGICAL  
● FOUNDRY  
● MECHANICAL

**5 OUT OF 8**  
*Re-designed!*  
**BY UNITCAST**

### IS YOUR INDUSTRY REPRESENTED?

UNITCAST sales engineers and technical staff backed with 30 plus years of practical "know how" are daily offering suggestions or advice on casting problems to ASSURE our customers the best. Why not let your problems become OURS to solve.

INDIVIDUAL attention is given to EACH casting from the blue print stage through all phases of production before releasing the pattern for construction. CONSTANT follow up BOTH at Unitcast foundries and in the customer's plant serve to assure the ULTIMATE in complete acceptance of Unitcastings.

It is our desire to be the guardian of your good name. Specify UNITCASTINGS for more consistently TOP QUALITY CASTINGS . . . in less time and at less finished cost.

## UNITCAST

*Corporation*

### QUALITY STEEL CASTINGS



Give us a chance to offer a "cast steel" answer for your parts problem. Our suggestions while your product is in the design stage will pay continuous dividends.

Write or call today. Unitcast Corporation, Steel Casting Division, Toledo 9, Ohio. In Canada: Canadian-Unitcast Steel, Ltd., Sherbrooke, Quebec.

**UNITCASTINGS ARE FOUNDRY ENGINEERED**

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NATIONAL BLUE PRODUCTS

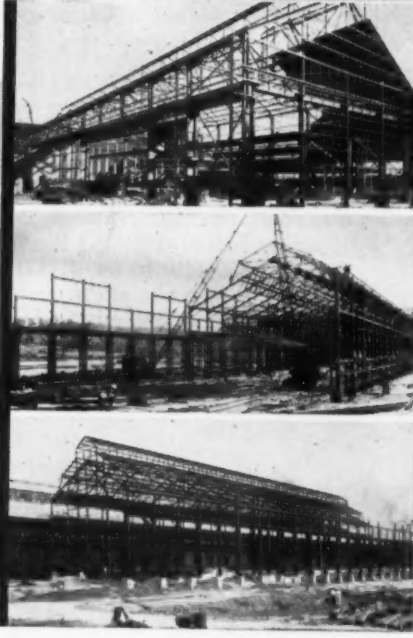
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## Technical Briefs

### Elliott Oxygen System Bought

Purchase of all process and patent rights covering the Elliott oxygen system for production of tonnage oxygen and high purity nitrogen, and availability of complete plants of this type on a turn-key contract basis, has been announced by H. K. Ferguson Co.

The Elliott process is a new system, differing markedly in some respects from systems developed abroad and now offered in this country. Ferguson engineers have cited the following outstanding advantages:

The system operates at reduced loads without sacrifice in efficiency, and is immune to possible dangers of acetylene explosions. Controls are automatic and automatically adjust the system to any oxygen demand. Periodic shutdowns for removal of accumulated deposits of water and carbon dioxide are avoided.

Recovery of oxygen from air charged to the system is over 97 pct. Liquid nitrogen is available from the system and gaseous or liquid nitrogen purity is guaranteed at 99.82.

Oxygen is being used in ever-increasing quantity in melting operations by large and small plants alike.



ICE CREAM and other dairy products are mixed in this big vat being welded at Cherry-Burrell Corp., Little Falls, N. Y. General Electric's Fillerweld Inert-Arc welder, used to weld on lining, has permitted 30 to 50 pct reduction in finishing costs. Gun is manual water-cooled Inert-Arc tungsten holder with control switch and gear assembly for pulling filler metal from spool to arc through gun.

## See Lower Radiography Costs

Industrial radiography of a wide range of metals and metal products at greatly lowered costs through the utilization of atomic waste products is forecast in a survey conducted at the Stanford Research Institute for the Atomic Energy Commission.

Paul J. Lovewell, director of the research group, explains that certain by-products of atomic pile production, now waste, can be recovered and utilized for radiographic inspection at a cost substantially lower than present methods.

Radioactive fission products, used in conjunction with Geiger counters and suitable film, makes it possible to develop many techniques for measuring and controlling industrial processes.

## Dedicate Iron, Steel Library

Every aspect of the history and development of iron have been covered in the 8000 volume George Fischer Iron Library recently dedicated at Schaffhausen, Switzerland. The library will be housed in the ancient monastery of Paradises.

Dedication address at the opening of the library was made by W. H. Worrlow of Lebanon Steel Foundry, American trustee for the Fischer library. Creation of the library is due to the foresight of Ernst Muller, a director of the Fischer Co.



"You told me to work out a visual filing system."

June 12, 1952

LOW CARBON • HIGH CARBON • ALLOY • STAINLESS • STRIP AND TUBING

UNIFORM  
HIGH QUALITY  
*Demands*  
MODERN  
EQUIPMENT



Production of steel strip and tubing to meet modern industry's rigid specifications demands the most modern equipment. During the last 30 years, The Wallingford Steel Co. has kept pace with developments in both machinery and techniques by sponsoring a continuous program of replacement and improvement. Today, not one piece of original equipment is still in use. The two-stand, four-high tandem rolling mill shown above is an outstanding example of the many precision built production machines in our completely equipped plant. Electrolimit continuous mill gages provide a constant check in holding strip to extremely close tolerance.

THE  
**WALLINGFORD**  
SINCE  1922  
**STEEL**  
CO.

WALLINGFORD, CONNECTICUT, U.S.A.



## Swimming Pool:

Low power reactor is shielded by water . . . Reactor costs cut.

A relatively inexpensive, low-power nuclear reactor with a unique water shield for protection against radiation has been developed jointly by Union Carbide & Carbon Corp. and the Oak Ridge

Operations Office of the U. S. Atomic Energy Commission.

The reactor is the central feature of a bulk shield testing facility popularly known as the "swimming pool." The reactor is submerged in a pool of water 20 ft deep, 20 ft wide, and 40 ft long, in which it can be moved about. The

reactor became "critical" on Dec. 17, 1950, and was placed in operation soon afterward.

**Low Cost**—All facilities were constructed for slightly more than \$200,000, exclusive of uranium fuel. Of this amount, the reactor core structure itself cost only \$58,400, the rest of the cost being for concrete work, the building, and auxiliary equipment.



## Give you these features



Double-acting spring cushioned draw bar to minimize stopping and starting shock, positive trail at high speeds, maximum roadability on rough terrain, sturdy solid steel axle beam construction . . . these features combine to make CARAVAN units outstanding among axle assemblies.

In addition, CARAVAN axles are noted for versatility. They are suitable for use on all types of industrial, field-service, construction and military equipment . . . wherever dependable portability is needed.

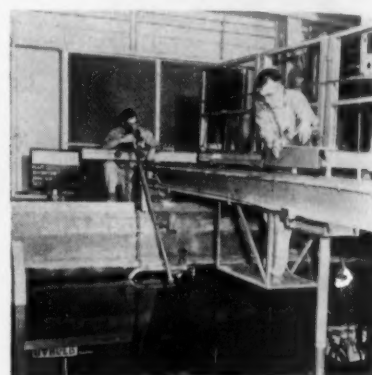
Both single axle (2-wheel) assemblies and 4-wheel running gear equipped with automotive type steering are available to meet a wide range of requirements. Units of either straight or drop type construction can be supplied.

Write today for United's 12-page illustrated Catalog No. 101. In addition to specifications on the complete line of CARAVAN axles, it contains descriptions of automatic surge-control braking device, retractable third-wheel assembly and other CARAVAN accessories.



**THE UNITED MANUFACTURING CO.**

688 W. Interstate Street • Bedford, Ohio



INEXPENSIVE SHIELD for low power atomic reactor is this "swimming pool" shown being tested by Carbide & Carbon Co., Oak Ridge National Laboratory.

This "swimming pool" reactor has a continuous, full-load power rating of 10 kw, at which it produces a maximum flux, or neutron density, of approximately 100 billion thermal neutrons per sq cm per second.

**Aluminum Gate**—A useful feature of the facility is an aluminum gate, 12 ft high x 21 ft long, 10 ft from one end of the 130,000 gal pool. When the reactor is moved to this end of the pool, the gate can be lowered and the greater area of the pool can be blocked off and pumped dry. Thus, some repairs and adjustments are facilitated, and instruments and shielding samples can be placed easily in desired spots, with personnel meanwhile protected from radiation.

The reactor is housed in a steel-frame building, with corrugated metal siding, 38 ft high, 77 ft long, and 51 ft wide. In addition to a bay housing the pool, the building has 3000 sq ft of office and shop space.

## Plating:

Chromium solution does less damage to steel fatigue strengths.

Smaller, lighter parts may be possible where chromium plating formerly cut fatigue limits of high strength steels. Tests conducted by Prof. M. J. Sinnott, University of Michigan, have shown that chromium plate deposited from certain types of solutions has noticeable less effect on fatigue strength.

Tests were made on aircraft quality SAE 4130 steel heat-treated to Rc 40-41 and a tensile strength of 185,000 psi. One set of unplated specimens was fatigue-tested directly. All other sets were chromium plated in different chromium plating solutions before testing.

**Controlled Conditions**—Preparation prior to plating, as well as current density and temperature during plating, was closely controlled and made identical for all samples. Fatigue limits were determined by the standard R. R. Moore rotating beam method.

Of chromium deposits tested, those from the self regulating high speed Unichrome S.R.H.S. CR-110 Solution had the least effect on fatigue strength.

**Size Affected**—Until recently the ordinary chromium plating solution was used almost exclusively and consequently engineers designing components subject to alternate stress had to make very substantial allowance for decrease in fatigue strength attributable to the chromium plate.

Using CR-110 solutions the engineer may design smaller and lighter sections. A part to be plated with 0.001 in. of chromium from an ordinary solution ordinarily requires a stress section area about 35 pct heavier than that of an unplated piece for the same strength. Using the CR-110 solution the section would have to be increased only about 8 pct. A part plated in a CR-110 bath has a higher safety factor than the same part plated in the ordinary type of bath.

## JOHNSON DISTRIBUTORS SELL

### a COMPLETE LINE of SLEEVE BEARINGS

Your Johnson Bronze Distributor offers you a distinct advantage in this extensive line of sleeve bearings and bearing metals. It meets practically every industrial bearing need. There are over 900 stock sizes of Cast Bronze General Purpose (GP) Bearings; more than 300 Electric Motor (EM) Bearings; more than 200 sizes of Cast Bronze Graphited Bearings; and a large list of Ledaloyl Self-Lubricating Bearings and Parts. Then, too, there are Lead-Base Babbitt, Tin-Base Babbitt, and over 350 sizes of Universal Bronze Bars, both cored and solid. All are stock items. Supplementary stocks are warehoused in twenty-two industrial cities to facilitate delivery for Johnson Bronze Distributors.

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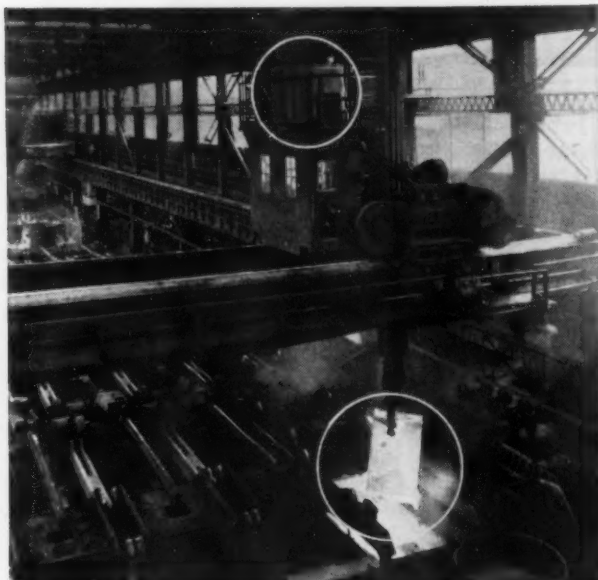


**JOHNSON BEARINGS**  
*Sleeve-B Type*

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STEEL**

*uses... DRAVO*  
**CRANE CAB COOLERS**

*in its "HOTTEST SPOT"*



**SOAKING PIT OPERATIONS MADE MORE  
EFFICIENT, WORKING CONDITIONS BETTER**

The hottest spot in any steel mill crane operation is over the soaking pit. Temperatures range as high as 170° F.; dirt, dust, fumes and gases limit the time any man can work his crane over this installation.

Jones & Laughlin Steel Corporation has eliminated this working hazard by installing Dravo Crane Cab Coolers on the cranes working over these hot spots.

**CRANE CAB COOLERS HAVE LONG SERVICE  
LIFE, PROVIDE YEAR-ROUND AIR CONDITIONING**

Dravo Crane Cab Coolers are ruggedly constructed, factory assembled and pre-tested to provide years of more-than-satisfactory service. All equipment in the unit is readily accessible with ample space for quick and efficient maintenance.

In the various air conditioning functions the crane cab cooler not only filters the air, removes dust, dirt and fumes, but heats the cab in winter, cools it in summer and provides constant ventilation the year around.

**AVAILABLE IN SINGLE UNIT OR IN SPLIT-TYPE  
UNIT; IMMEDIATE DELIVERY**

Dravo Crane Cab Coolers are built in two models—the self-contained unit, mounted on any available space on the crane and the new split-type unit where the condenser section is mounted on the crane, with the conditioning section in cab.

The Dravo Crane Cab Cooler can be easily and quickly installed on any type of crane with a minimum of down-time required. Units are available now! Write for more information—or phone the nearest Dravo Office and have our representative call on you.



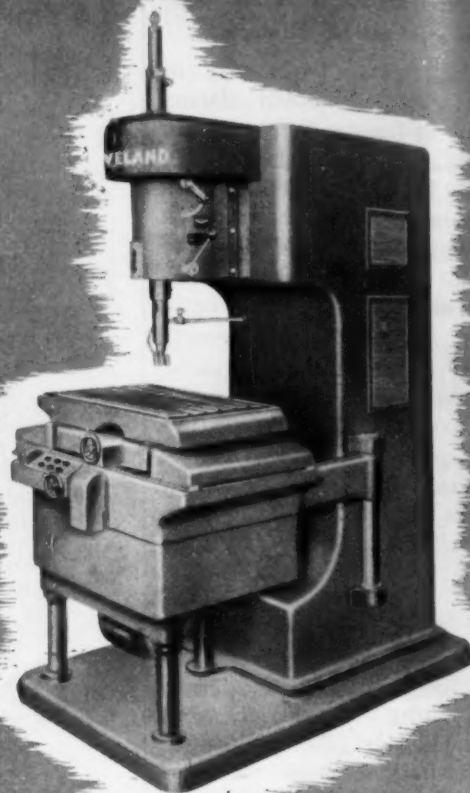
**DRAVO CORPORATION**

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**CLEVELAND**  
**tapping machines**

*lead  
screw*



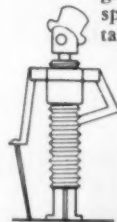
*tapping machine  
of the year*

**3 Dimensional Performance**

Moving freely in three dimensions, the compound table of the New Cleveland Type ER Tapper is another triumph of Cleveland engineering. Moves freely on ball bearing race-ways . . . 40" lateral travel . . . 24" travel front to back . . . compound a 24" bolt circle . . . 18" vertical travel is by motor drive . . . solenoid lock up of table.

**Check these Cleveland Features**

Fidelity of thread from the first thread to the last thread . . . ease of operation . . . all controls at finger tips . . . precision depth control . . . hardened and precision ground lead screw . . . heat treated alloy spindles . . . speeds quickly changed . . . rigid construction . . . added tap or die life. Write for your copy of Catalog R-11



**Mr. Lead Screw says:**

Cleveland Engineers are at your service if you need High Production . . . Close Tolerances . . . Increased Profits. CLEVELAND TAPPING MACHINES can effect economies on operations such as Threading, Drilling, Spot-facing, Reaming, Chamfering.



**THE CLEVELAND TAPPING MACHINE CO.**

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# Union Shop Issue Deadlocks Steel Wage Bargaining

**Wage, fringe benefit questions felt largely settled . . . Lack of compromise based on principle . . . Management seeks to preserve freedom of choice . . . Murray blasts free riders.**

Steel negotiations were coming into the final stretch last Monday when they hit the hurdle of the union shop issue and fell flat. Wage and fringe benefit matters had been regarded as largely settled. The deadlock became one of principle—for the companies could not yield on union shop and by so doing betray the democratic principle of free choice.

John Stephens, representing U. S. Steel Co., restated the firm belief of the industry that it was up to the worker to decide on whether or not he wanted to belong to the union. Philip Murray, president of the United Steel Workers, previously had denounced those workers (relatively few) who were getting a "free ride" on the union.

Most of the economic terms of a new contract had been pretty well worked out. Settlement—when it comes—was expected to include a total wage-fringe package costing about 22¢ per hr. It would have been on a 2-year basis, to expire about mid-1954. Higher costs would have been cushioned by a price rise of around \$5.50 a ton.

**Tough Problems**—Last minute hitch was the union shop. But two other tough problems would have to be solved: Retroactivity and escalation, and premium pay for Sundays. (See p. 72 for steel's offer, latest developments.)

It had previously been decided that each point of agreement would be considered tentative until all points at issue were settled.

Details of the compromise settlement were expected to be about like this: WSB recommendations for a 2½¢ per hr wage increase on July 1 this year and another on Jan. 1 next year would probably have been

translated into an immediate raise. The stumbling block of extra pay for Sunday might also have been compromised and included in the cents-per-hour increase. This would bring the immediate wage boost to about an average 16¢ an hr. Cost of fringe adjustments would have been about 5½¢. This would make the total cost of the package about 22¢ per hr.

Other terms of the contract would have included: Six paid holidays, with double pay for work on these holidays; 3 weeks' vacation for 15-years' service; increases in shift differentials to 6¢ and 9¢; and reduction in the southern differential from 10¢ to 5¢.

There were still some other wrinkles to be ironed out. But these were considered to be minor problems compared with the tough one of union shop.

**Fed Up**—Fading patience of public and Congress was spurring the driving efforts of steel company and union negotiators. With the nation's steel losses mounting at a frightening pace (nearly 300,000 tons a day), the agreement could not come too soon. Counting 2.5 million tons lost in the two previous short stoppages (Apr. 8 and Apr. 29), total steel production lost during this dispute will amount to more than 6 million tons by the end of this week. More was coming.

**Keep Insisting**—A few steel consumers were still desperately insisting that the strike could not be allowed to last too long.

The strike has served as an involuntary inventory correction for some manufacturers. It has shaken some steel out of the supply lines. At a result the market is expected

to be stiffer — depending on the duration of the shutdown.

The flurry of consumers seeking new sources of steel is continuing, though at a reduced tempo. National Production Authority restrictions on warehouse orders has helped tone them down.

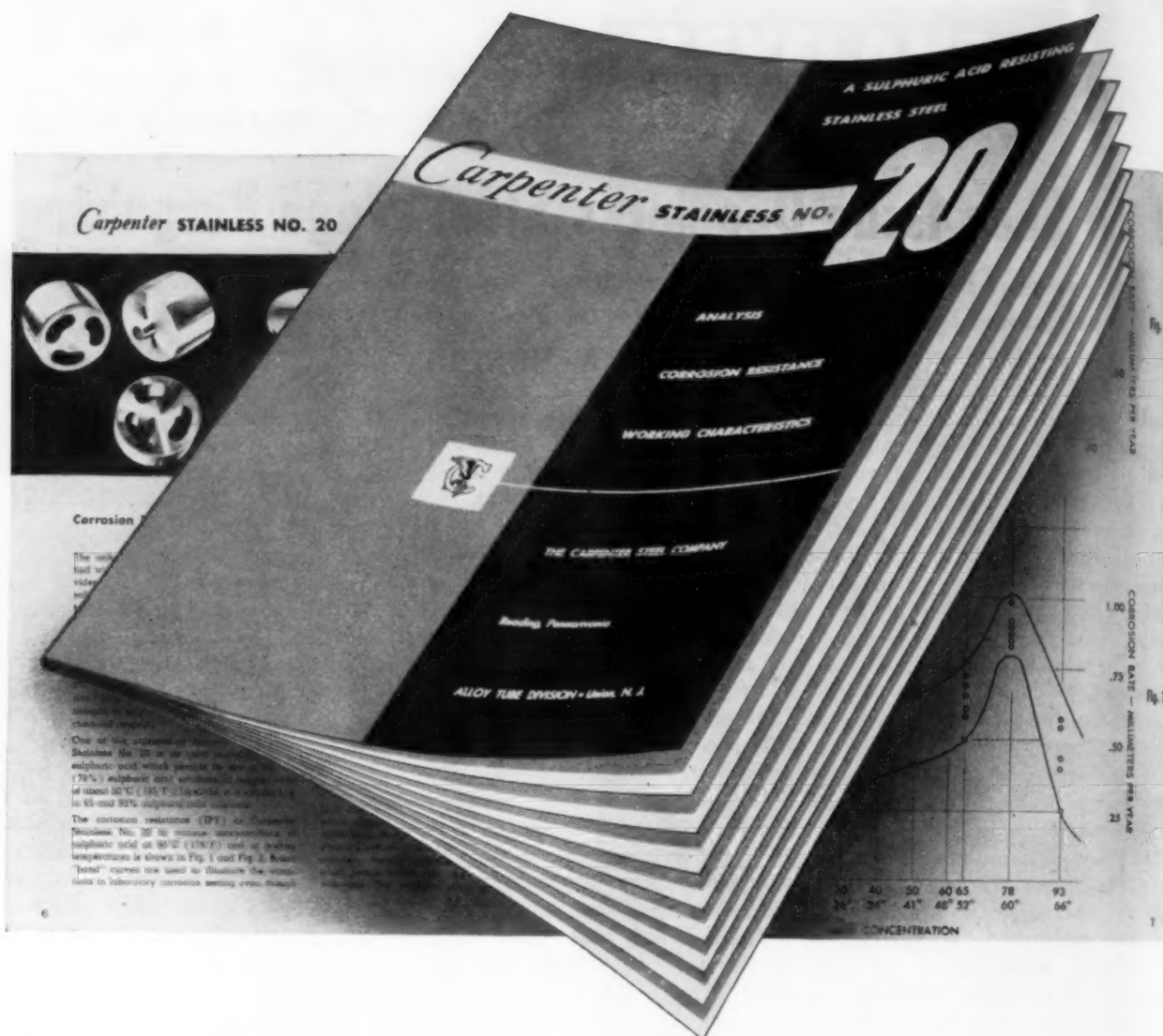
There is some new interest in conversion steel. Conversion of oil well supplies was already taking place on a large scale before the strike. Other consumers are now investigating their old conversion channels—just in case. Brokers selling foreign steel at higher prices are taking advantage of the strike to unload their supplies.

**Good Inventories**—An IRON AGE check of manufacturing plants working on military contracts shows their inventories generally are in good shape. Most of these companies could keep operating at least 3 or 4 weeks with the steel they have on hand. But there are enough exceptions to build a case for hardship.

For example, one firm making mortar shells has already been forced to cut down to a 4-day week, then a 3-day week. The company uses 4½-in. seamless tubing and bar stock. The same firm is cutting its work week from 10 hr a day, 6-days a week to 8 hr a day, 5-days a week on non-military lines.

**Wrong Guesses**—A few firms have found inventories not as good as first thought. One auto company which figured it could keep producing at least a month has already had a call for help from a vendor supplying springs. Not having the required steel in stock, the auto company is already beating the bushes to patch up this weak spot in its supply line.

Steelmaking operations this week are scheduled at 13 pct of rated capacity, down 25.5 points from last weeks' revised rate.



## This New Book Gives You Latest Data on *Carpenter* Stainless No. 20

This new book is part of Carpenter's service to engineers interested in improved processes and longer equipment life through better corrosion resistance. Its 20 pages contain factual engineering data on the alloy's resistance to a number of corrodents such as sulphuric acid, plating and pickling solutions, acetic acid, etc.

Information on No. 20's electrical and physical properties and its workability is also included. 43 field reports from

users of No. 20 show how this Stainless compares with other materials. No. 20's excellent resistance to sulphuric acid at various concentrations and temperatures is described in several of the reports.

A copy of the new Carpenter Stainless No. 20 book will be a useful addition to your Future Planning file. For your copy, just drop us a note on your company letterhead, indicating your title.

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## Market Briefs

**Galvanized Sheets**—Two reductions which brought zinc prices down to 16¢ per lb are reflected in a cut in galvanizing extras. Galvanized sheet prices of U. S. Steel Co. will come down about \$1.75 to \$8.75 per ton depending on gage by means of the automatic sliding extra.

**Controls Remain**—Controls on Canadian materials will remain until the international situation is more clarified and defense requirements can be better determined, reports the Dept. of Defence Production. Plants for defense production have been built during the past 1½ years, and although supplies have been in balance with demand up till now, this picture may be altered when defense production begins. In addition, certain supplies come from the U. S., and it will not be possible for Canada to drop controls before similar action is taken in the U. S.

**Operation Delay**—Production at Lukens Steel Co., Coatesville, Pa., will not be resumed immediately after settlement of the recent steel strike—because of need for maintenance and repair work. Time needed for the repairs varies from 12 hr to 5 weeks for different operations. Major projects are repairs to a 120-in. mill and rebuilding of a 112-in. mill. A number of employees will not be called back to work until the repair and maintenance jobs have been completed.

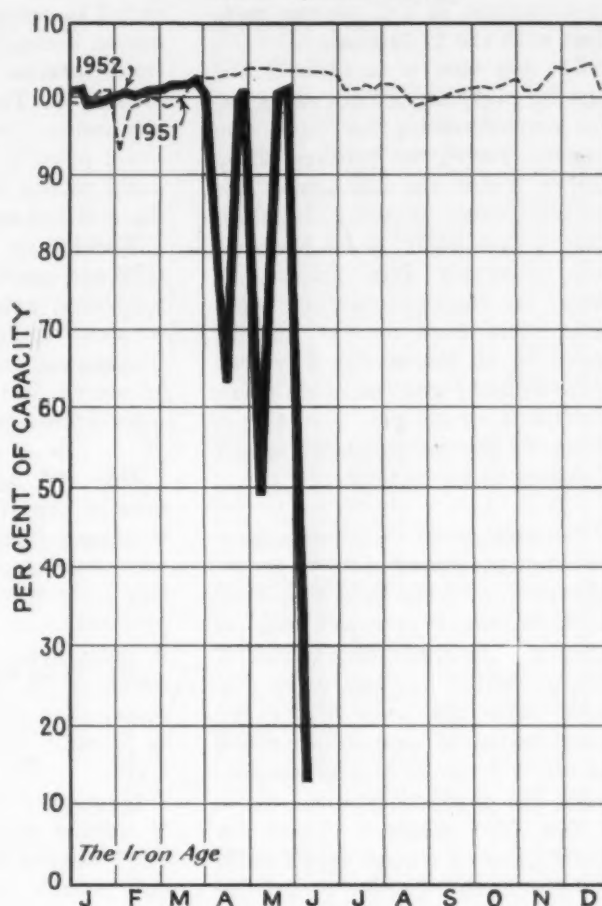
**Mill Priority**—National Production Authority over the weekend issued Dir. 13 to CMP Reg. 1, setting up 12 categories of essential defense production which are to receive priority treatment from operating steel plants ahead of any other order except NPA directives. No category has special status, however. Programs given priority on mill schedules under the order are: A-1, Aircraft; A-2, guided missiles; A-3, ships; A-4, tank-automotive; A-5, weapons; A-6, ammunition; A-7, electronic and communications; C-3, military MRO; E-1, AEC construction; E-2, AEC operation; E-3, private facilities on AEC work; and Z-2, metalworking machinery and equipment.

**Canadian Construction**—Construction in Canada is moving at a fast pace. Contract for building RCA Victor Ltd.'s million-dollar electronics plant at Prescott, Ont., was given to Concrete Construction Co. Work on the steel, concrete and brick plant is expected to be finished by next spring. Another million-dollar plant is being built by the Canadian Pacific Ry. at Nelson, B.C. The new diesel service plant will be the second largest service unit in Canada.

**Price Boost**—Acceptable manganese ore will bring a base price of \$2.30 per long ton unit if sold to the government at Deming, N. M., reports Defense Materials Procurement Agency. The DMPA price represents a 30¢ per unit increase and was pegged to bring payments in line with domestic production conditions.

**No Loan Needed**—Trenton Steel Corp., of Detroit, has withdrawn its application to Reconstruction Finance Corp. for \$50 million loan. RFC says it had the application under study and had asked company representatives to come to the Detroit regional office for a loan conference when the application was withdrawn.

### Steel Operations



### District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
June 1	30.5*	34.5*	33.0*	36.0*	43.5*	20.5*	29.0*	70.0*	64.0	31.0*	69.5*	56.5*	38.5*	38.5*
June 8	3.0	8.5	7.0	13.0	21.0	0.5	0.0	30.0	50.0	3.5	57.5	39.0	14.0	13.0†

Beginning Jan. 1, 1952, operations are based on annual capacity of 106,587,670 net tons.  
\* Revised.  
† Estimated.



## Nonferrous Markets

### Modify Copper Product Pricing

**Must now absorb 20 pct of extra cost over 24.5¢ instead of 27.5¢ . . . Chilean copper sells at 35.5¢ port of shipment . . . Zinc off another 1.5¢, demand slow—By R. L. Hatschek.**

Latest development in the copper price muddle is that consumers will now be permitted to pass on 80 pct of the excess cost over 24.5¢ rather than over 27.5¢. That's putting it the gentle way—they'll have to absorb 20 pct of costs exceeding the lower figure, too. It means that they'll have to absorb 20 pct of the 3¢ difference, or \$12 per ton more than with the 27.5¢ base.

The big idea is to equalize the cost for everyone and not cause undue extra hardship for those who weren't forced to procure 27.5¢ copper under the old setup. Apparently Office of Price Stabilization is just going to let everyone add a certain fixed amount to prices of copper-containing products. The fixed amount will be based on 80 pct of the difference between 24.5¢ and the world price, multiplied by 40 pct. The 40 pct being the amount of foreign copper allocated to the consumer.

**Tentative Price**—Chilean copper has been purchased at 35.5¢ per lb. This gives a 35.15¢ f.a.s. New York price. A copper user can pass on 9.32¢ per lb for every pound of foreign metal at that price. He could raise his price 3.728¢ for every pound of copper (of which 60 pct is domestic and 40 pct foreign) his product contains.

Now OPS wants to know the world price of copper next month, and the next, in order to be able

to set up price schedules for those periods. It is supposed that these ceilings will be worked out on an average price basis since consumers costs will probably vary and prices can be expected to fluctuate within the time periods.

**Change Ceiling**—OPS was expected to remove the old 27.5¢ ceiling on domestically refined copper from foreign concentrates either Monday or Tuesday. This will allow refiners to charge the going world price to consumers. Foreign scrap copper will also come under the modified regulation.

Washington meetings between OPS and representatives of copper producers, copper wire mills and brass mills were scheduled throughout the week. Objective, of course, is to establish the new price schedules.

**Zinc Off Again**—General softness in the zinc market plus the continued steel strike were at the root of another price cut. This time zinc came down 1.5¢ per lb to 16¢. The reduction was made on June 5, only three days after the first break of 2¢. No buying stampede began since there wasn't any steel to be galvanized.

**Ingots Unchanged**—Normally—if anyone remembers what "normal" means—brass and bronze ingot makers would have lowered

their prices by this time to reflect reduced zinc costs. They haven't done so as yet. Reason is the copper situation. But they do say one thing—they do not intend to raise prices despite possibilities in copper. They will wait and see what happens and then make any changes.

But zinc scrap dropped like a rock. Actually, prices declined a bit in anticipation of the first cut in new zinc and then, with the cuts, scrap declined about 3¢ per lb on new clips, proportionately on other grades.

**Aluminum Output**—April total of aluminum produced in the U. S. was 76,880 tons as compared to 77,069 tons in the preceding month. This brings production for the first 4 months of 1952 to a total of 303,257 tons and, with new capacity coming in almost continually, the year's total will be a record very close to a million tons.

**More Expansion?**—Despite these huge gains, official pressure to encourage the building of additional smelting facilities is continuing at Defense Production Administration. Administrator Fowler says flatly that there will be no shortage of markets for the greater supplies a new round of expansion would create.

The new DPA chief last week told the House-Senate Committee on Defense Production that he does not intend to "rush" into an agreement for the purchase of large quantities of Canadian aluminum. He states other sources should first be studied and cited as possibilities further expansion within the borders of the U. S. and Aluminum Co. of America's proposal to build a plant at Taiya, Alaska.

Lawmakers are reviewing the proposal to purchase 80,000 tons per year of Canadian aluminum during the period 1954-58. Some Congressmen, headed by Sen. J. William Fulbright, oppose the plan which they feel would be underwriting a Canadian expansion rather than one in this country.

#### NONFERROUS METAL PRICES

	June 4	June 5	June 6	June 7	June 9	June 10
Copper, electro, Conn. . . . .	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered . . . .	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York . . . . .	\$1.215	\$1.215	\$1.215	....	\$1.215	\$1.215
Zinc, East St. Louis . . . . .	17.50	16.00	16.00	16.00	16.00	16.00
Lead, St. Louis . . . . .	14.80	14.80	14.80	14.80	14.80	14.80

Note: Quotations are going prices.

# Nonferrous Prices

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

### Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 75S-O, 75S-OAL, 41.8¢; 0.032 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.
Plate 1/4 in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.
Extruded Solid Shapes: shape factors 1 to 5, 36.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 26, 39.6¢ to 116¢; 36 to 38, 47.2¢ to 170¢.
Red, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 23.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5 to 35¢.
Screw Machine Stock: Rounds, 11S-TS, 1/4 to 1 1/2 in., 53.5¢ to 42¢; 1/2 to 1 1/2 in., 41.5¢ to 39¢; 1 1/2 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 6000 lb.
Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 39.5¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 47¢; 75S-T6, 84¢ to 67.5¢.
Extruded Tubing, Rounds: 63S-ST-5, OD in. 1 1/4 to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.
Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., \$1.42; 96 in., \$1.52; 120 in., \$1.90; 144 in., \$2.28. Gage 0.24 x 28 in., 72 in., \$1.37; 96 in., \$1.89; 120 in., \$2.29; 144 in., \$2.75. Coiled Sheet: 0.019 in. x 28 in., 28.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

### Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, 1/4 in., 63¢; 3/16 in., 66¢; 1/2 in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.
Extruded Round Rod: M. diam in., 1/4 to 0.311 in., 74¢; 1/2 to 1 in., 57.5¢; 1 1/4 to 1.749 in., 53¢; 2 1/4 to 5 in., 45.5¢. Other alloys higher. Base up to 1/2 in. diam, 10,000 lb; 1/2 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.
Extruded Solid Shapes, Rectangles: M. In weight per ft. for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 54.7¢; 1.8 to 2.69 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.
Extruded Round Tubing: M. wall thickness, outside diam. in., 0.049 to 0.057; 1/4 in. to 5/16, \$1.40; 5/16 to 3/4, \$1.26; 3/4 to 1, 98¢; 1 to 2 in., 76¢; 0.165 to 0.219, 1/2 to 3/4, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in. in. Up to 1 1/2 in., 10,000 lb; 1 1/2 in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

### Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

### Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60 1/2
Strip, cold-rolled	83	63 1/2
Rods and bars	73	58 1/2
Angles, hot-rolled	73	58 1/2
Plates	75	59 1/2
Seamless tubes	106	92 1/2
Shot and blocks		53 1/2

### Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	41.68		41.28
Copper, h-r		37.53	
Copper, drawn		38.78	
Low brass	39.67	39.36	
Yellow brass	38.28	37.97	
Red brass	40.14	39.83	
Naval brass	43.20	37.26	38.52
Lead copper		41.58	
Com'l bronze	41.13	40.82	
Phos. bronze	46.92	40.81	42.37
Muntz metal	41.18	36.74	37.99
Ni silver, 10 pct	49.82	52.04	

## PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	19.00
Aluminum pig	18.00
Antimony, American, Laredo, Tex.	39.00
Beryllium copper, 3.75-4.25% Be	\$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be	\$69.50
Bismuth, ton lots	\$2.25
Cadmium, del'd	\$2.25
Cobalt, 97-99% (per lb)	\$2.40 to \$2.47
Copper, electro, Conn. Valley	34.50
Copper, Lake, delivered	34.625
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz.	\$2.25
Iridium dollars per troy oz.	\$200
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	24.50
Magnesium, sticks, 100 to 500 lb.	42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York	\$197 to \$200
Nickel electro, f.o.b. N. Y. warehouse	59.58
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	52.75
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$90 to \$93
Silver, New York, cents per oz.	82.75
Tin, New York	\$1.215
Titanium, sponge	\$5.00
Zinc, East St. Louis	16.00
Zinc, New York	16.83
Zirconium copper, 50 pct	\$6.20

## REMELTED METALS

### Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	27.25
No. 120	26.75
No. 123	26.25
80-10-10 ingot	
No. 305	33.00
No. 315	30.50
88-10-2 ingot	
No. 210	41.50
No. 215	40.00
No. 245	34.50
Yellow ingot	
No. 405	23.25
Manganese bronze	
No. 421	30.50

### Aluminum Ingot

(Cents per lb, 10,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	20.6
0.60 copper, max.	20.4
Piston alloys (No. 122 type)	21.2
No. 12 alum. (No. 2 grade)	19.5
108 alloy	20.6
195 alloy	20.8
13 alloy	20.8
ASX-679	20.5

### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1-95-97 1/2%	18.80
Grade 2-92-95%	18.60
Grade 3-90-92%	18.40
Grade 4-85-90%	18.20

## ELECTROPLATING SUPPLIES

### Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	37.84
Electrodeposited	33%
Flat rolled	38.34
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34%
Zinc, oval	26 1/2
Ball anodes	25 1/2
Nickel, 99 pct plus	
Cast	76.00
Rolled, depolarized	77.00
Cadmium	\$2.40
Silver 999 fine, rolled, 100 oz lots, per troy oz., f.o.b. Bridgeport, Conn.	97 1/2

### Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	20 1/2
Nickel chloride, 375 lb drum	27 1/2
Silver cyanide, 100 oz lots, per oz.	67 1/2
Sodium cyanide, 96 pct domestic	
200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1/4¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turn- ings
Copper	21 1/2	20 3/4
Yellow brass	19 1/2	17 1/2
Red brass	20 1/2	19 1/2
Comm. bronze	20 1/2	19 1/2
Mang. bronze	18 1/2	17 1/2
Brass rod ends	18 1/2	

### Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25*
Radiators	14.75

\* Dry copper content.

### Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	18.50
No. 1 comp. turnings	18.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	14.75

	Aluminum
Mixed old cast	9.75
Mixed new clips	11.00
Mixed turnings, dry	9.50
Pots and pans	9.25

### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

### Copper and Brass

No. 1 heavy copper and wire	18 1/2-19 1/4
No. 2 heavy copper and wire	17-17 1/2
Light copper	15 1/2-16
New type shell cuttings	15 1/2-16
Auto radiators (unseated)	14-14 1/4
No. 1 composition	17 1/2-18
No. 1 composition turnings	17-17 1/2
Unlined red car boxes	16 1/2-17
Cocks and faucets	15-15 1/2
Mixed heavy yellow brass	11 1/2-12
Old rolled brass	14 1/2-15
Brass pipe	15 1/2-16
New soft brass clippings	16-16 1/2
Brass rod ends	15 1/2-16
No. 1 brass rod turnings	15-15 1/2

	Aluminum
Alum. pistons and struts	6-6 1/2
Aluminum crankcases	7-7 1/2
2S aluminum clippings	10
Old sheet and utensils	7-7 1/2
Borings and turnings	5-6
Misc. cast aluminum	7-7 1/2
Dural clips (24S)	7-7 1/2

	Zinc
New zinc clippings	9
Old zinc	7
Zinc routings	2 1/2-3
Old die cast scrap	5

### Nickel and Monel

Pure nickel clippings	35-36
Clean nickel turnings	35-36
Nickel anodes	35-36
Nickel rod ends	35-36
New Monel clippings	28-29
Clean Monel turnings	20-21
Old sheet Monel	25-29
Nickel silver clippings, mixed	13-14
Nickel silver turnings, mixed	12-13

	Lead
Soft scrap, lead	11-11 1/2
Battery plates (dry)	6 1/2-7
Batteries, acid free	4-5

	Magnesium
Segregated solids	15-16
Castings	14-15

	Miscellaneous
Block tin	100-110
No. 1 pewter	70
No. 1 auto babbitt	60
Mixed common babbitt	13 1/2-14
Solder joints	19-20
Siphon tops	60
Small foundry type	18-18 1/2
Monotype	14 1/2-15
Lino. and stereotype	12 1/2-13
Electrotype	11-11 1/2
Hand picked type shells	8 1/2-9
Lino. and stereo. dross	6-6 1/2
Electro. dross	5-5 1/2



# Iron and Steel Scrap Markets

## Strike Shuts Down Dealer Shipments

**Mills halt dealer shipments . . . Permit industrial scrap to move under contract . . . OPS authorizes intransit payments . . . Worry over ceilings . . . Cast gives wriggle of new life.**

The strike last week saw dealer shipments of scrap to shutdown steel mills cut short.

Even in shutdown some scrap was moving. This came principally from manufacturers with whom steel plants had contracts. Some mills were buying prime heavy melting grades such as railroad grades, claiming that the excellent quality of this material made it

*For story on scrap market developments see p. 75, News Section.*

worth while. But there did not appear to be much interest in buying run-of-the-mill scrap for storage in outside depots.

Some provision was made by Office of Price Stabilization for in-transit scrap during a strike. Mills were empowered to pay a fee of not more than \$1.50 per ton for services included in receiving, unloading, storing and reloading iron and steel scrap in transit during a strike.

There was much conversation made on the fate of OPS ceiling prices on openhearth scrap. Even a short strike, it was agreed, would beef up supply to the detriment of demand. Big question was whether the shutdown would hasten under-ceiling sales.

Cast grades of scrap, whose market had been blighted for months, showed a spark of life because of the strike. Alarmed at the future of their pig iron supply, foundries in a few cases entered the market.

**Pittsburgh**—Because of the strike no scrap can be unloaded at the mills, and they have halted shipment. Some material already in transit when the strike came is being held in railroad yards collecting demurrage. Some mills are buying railroad and industrial scrap and having it laid down elsewhere. This will raise their costs a little, but they believe the quality of

this material makes it worthwhile. There is no action in the turnings market. Cast grades are a little firmer. With pig iron production shut off foundries have entered the market.

**Chicago**—Scrap dealers here were predicting a price drop here following settlement of the steel strike. At least one report of increased cast scrap buying was received but in general, cast remains in poor shape. Electric furnace grades were beginning to weaken, with sales down and springboards eliminated. They are being delivered at OPS ceiling prices. Mill buying was at a standstill generally.

**Philadelphia**—Scrap collections have dropped off slightly while shipments from yards is only a trickle. General consensus is that a strike will hasten lower scrap prices. Some western dealers are rumored to have already cut their buying prices. Last sale of blast furnace grades went at ceiling but consumers are very choosy and rejections are on the upswing.

**New York**—Scrap shipments from dealers to strikebound mills were at a standstill early this week. There was hope of an early settlement but dealers and brokers felt there would be a lull in mill buying because of scrap carloads received just prior to the strike. Some dealers were reportedly seeking to buy at below ceiling prices—wisely so because they did not care to gamble on prices staying at ceiling. Meanwhile mills with contracts to accept industrial scrap from plants stockpiled this material.

**Detroit**—As elsewhere in the trade, Detroit scrap dealers sat on their hands last week hoping for an early settlement of the steel strike. Industrial scrap moved, but dealer scrap was at a standstill. Mills took industrial scrap at receiving points. The one operating mill, Ford, took some electrical scrap grades. In general, however, Ford appeared to be generating enough scrap for the time

within the plant and was taking very little from outside.

**Cleveland**—The scrap trade in this area early in the week was marking time waiting for a settlement of the steel dispute. Some mills were laying down railroad and industrial scrap during the strike. Dealers prices in some cases were dropped due to depressing effect of the strike. However, some dealers handling strictly industrial scrap report unwillingness to lower buying prices due to competition from others for the material.

**St. Louis**—Because of the strike, there was no buying of any consequence here. Only one of the openhearth furnaces was unaffected by the strike and it was accepting shipments against orders it had placed. Foundries are comfortably fixed, and are awaiting developments. A few small sales between shippers and brokers of some distressed shipments of bundles were made at from \$1 to \$2 below the ceiling price.

**Birmingham**—With only three small steel plants working and one company operating a blast furnace, the scrap trade is quiet in this district. Electric furnace scrap and cast material are moving to local plants and nothing is going out of the district. Only sales of cast were stove plate at \$37 a ton and cupola at \$41, both off from the previous week.

**Cincinnati**—One mill here was operating early this week, but other producers were shut tight by the strike. Scrap was still being taken in by operating facilities at ceiling prices with no attempt to buy under ceiling. Openhearth and blast furnace cast was a little stronger.

**Boston**—Scrap dealers here said they might as well as be out of business when the steel strike stopped their shipments to mills. Solution to their problem was a quick return of steelworkers because of a settlement.

**West Coast** — Although turnings dropped \$5 a ton below ceilings in Los Angeles recently, ceiling prices still stood in San Francisco and Seattle. Smaller steel producers who operated through the strike were getting offers of scrap from smaller dealers but for the most part they stuck to regular suppliers.



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## LEADERS IN IRON AND STEEL SCRAP SINCE 1889

## -Scrap Prices

## Iron and Steel

## SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments. Shipping point and delivered prices calculated as shown below.)

GRADES	OPS No.	Switching Charge (Dollars per gross ton) →										Basing Points →																													
		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngtown	Carlton	Steubenville	Warren	Welfton	Cleveland	Buffalo	Cincinnati	Kidderston	Chicago	Claymont	Coatesville	Goshobuck	Harrisburg	Phoenixville	Sparrows Pt.	Baltimore	Ashland, Ky.	Kokomo, Ind.	Pertsmouth, O.	St. Louis	Detroit	Duluth	Kansas City	Birmingham	Atlanta	Minnequa	Houston	Los Angeles	Pittsburg, Cal.	San Francisco		
No. 1 bundles	1	\$44.00						\$44.00					\$43.00				\$42.50							\$42.00				\$41.00	\$41.15	\$40.00	\$39.50	\$39.00	\$38.00	\$37.00	\$36.00						
No. 1 busheling	2	44.00						44.00					43.00				42.50							42.00				41.00	41.15	40.00	39.50	39.00	38.00	37.00	36.00						
No. 1 heavy melting	3	43.00						43.00					42.00				41.50							41.00				40.00	40.15	39.00	38.50	38.00	37.00	36.00							
No. 2 heavy melting	4	43.00						43.00					42.00				41.50							41.00				40.00	40.15	39.00	38.50	38.00	37.00	36.00							
No. 2 bundles	5	43.00						43.00					42.00				41.50							41.00				40.00	40.15	39.00	38.50	38.00	37.00	36.00							
Machine shop turnings	6	34.00						34.00					33.00				32.50							32.00				31.00	31.15	30.00	29.50	29.00	28.00	27.00	26.00						
Mixed borings and turnings	7	38.00						38.00					37.00				36.50							36.00				35.00	35.15	34.00	33.50	33.00	32.00	31.00	30.00						
Shoveling turnings	8	38.00						38.00					37.00				36.50							36.00				35.00	35.15	34.00	33.50	33.00	32.00	31.00	30.00						
Cast iron borings	10	38.00						38.00					37.00				36.50							36.00				35.00	35.15	34.00	33.50	33.00	32.00	31.00	30.00						
No. 1 chemical borings	26	41.00						41.00					40.00				39.50							39.00				38.00	38.15	37.00	36.50	36.00	35.00	34.00							
Forge crops	11	51.50						51.50					50.50				50.00							49.50				48.50	48.65	47.50	47.00	46.50	45.50	44.50	43.00	42.00	41.00				
Bar crops and plate	12	49.00						49.00					48.00				47.50							47.00				46.00	46.15	45.00	44.50	44.00	43.00	42.00	41.00	40.00					
Punchings and plate	14	46.50						46.50					45.50				45.00							44.50				43.50	43.65	42.50	42.00	41.50	40.50	39.50	37.50						
Electric furnace bundles	15	46.00						46.00					45.00				44.50							44.00				43.00	43.15	42.00	41.50	41.00	40.00	39.00	37.00						
Cut struct., plate, 3 ft and less	16	47.00						47.00					46.00				45.50							45.00				44.00	44.15	43.00	42.50	42.00	41.00	40.00	39.						
Cut struct., plate, 2 ft and less	17	49.00						49.00					48.00				47.50							47.00				46.00	46.15	45.00	44.50	44.00	43.00	42.00	41.00	40.00					
Cut struct., 1 ft and less	18	50.00						50.00					49.00				48.50							48.00				47.00	47.15	46.00	45.50	45.00	44.00	43.00	42.00	41.00	40.00				
Foundry steel, 2 ft and less	20	44.00						44.00					43.00				42.50							42.00				41.00	41.15	40.00	39.50	39.00	38.00	37.00	36.00						
Foundry steel, 1 ft and less	21	46.00						46.00					45.00				44.50							44.00				43.00	43.15	42.00	41.50	41.00	40.00	39.00	38.00	37.00	36.00				
Heavy trimmings	24	43.00						43.00					42.00				41.50							41.00				40.00	40.15	39.00	38.50	38.00	37.00	36.00							
No. 1 RR heavy melting	RR 1	46.00						46.00					45.00				44.50							44.00				43.00	43.15	42.00	41.50	41.00	40.00	39.00	38.00	37.00					
Scrap rails, random lengths	RR 14	48.00						48.00					47.00				46.50							46.00				45.00	45.15	44.00	43.50	43.00	42.00	41.00	40.00						
Scrap rails, 3 ft and less	RR 16	51.00						51.00					50.00				49.50							49.00				48.00	48.15	47.00	46.50	46.00	45.00	44.00	43.00						
Scrap rails, 2 ft and less	RR 17	52.00						52.00					51.00				50.50							50.00				49.00	49.15	48.00	47.50	47.00	46.00	45.00	44.00						
Scrap rails, 18 in. and less	RR 18	54.00						54.00					53.00				52.50							52.00				51.00	51.15	50.00	49.50	49.00	48.00	47.00	46.00						
Scrap rails	RR 18	53.00						53.00					52.00				51.50							51.00				50.00	50.15	49.00	48.50	48.00	47.00	46.00	45.00	44.00					
RR 18	RR 18	53.00						53.00					52.00				51.50							51.00				50.00	50.15	49.00	48.50	48.00	47.00	46.00	45.00	44.00					
Uncut tires	RR 20	48.00						48.00					47.00				46.50							46.00				45.00	45.15	44.00	43.50	43.00	42.00	41.00	40.00						
Cut tires	RR 21	51.00						51.00					50.00				49.50							49.00				48.00	48.15	47.00	46.50	46.00	45.00	44.00	43.00	42.00					
Cut bolsters and side frames	RR 23	49.00						49.00					48.00				47.50							47.00				46.00	46.15	45.00	44.50	44.00	43.00	42.00	41.00	40.00					
RR specialties	RR 24, 28, 29	61.00						61.00					60.00				59.50							59.00				58.00	58.15	57.00	56.50	56.00	55.00	54.00	53.00	52.00	51.00	50.00			
Solid steel axles	RR 26	58.00						58.00					57.00				56.50							56.00				55.00	55.15	54.00	53.50	53.00	52.00	51.00	50.00						
No. 3 steel wheels	RR 27	51.00						51.00					50.00				49.50							49.00				48.00	48.15	47.00	46.50	46.00	45.00	44.00	43.00						
Unassorted	RR 35	40.00						40.00					39.00				38.50							38.00				37.00	37.15	36.00	35.50	35.00	34.00	33.00							

**Cast Scrap Ceilings**  
Prices set by CPR 5, OPS  
(F.o.b. all shipping points)

Grades	OPS No.	
Cupola cast .....	1	\$49.00
Charging box cast .....	2	47.00
Heavy breakable cast .....	3	46.00
Cast iron brake shoes .....	4	45.00
Stove plate .....	6	46.00
Clean auto cast .....	7	52.00
Unstripped motor blocks .....	8	43.00
Cast iron carwheels .....	9	47.00
Malleable .....	10	56.00
Drop broken mach'y cast .....	11	52.00

Ceiling price of clean cast iron foundry  
 runout or prepared cupola drops is 75  
 pct of corresponding grade.

### Below-Ceiling Prices

PITTSBURGH (Delivered)		
Drop broken mach'y cast	\$32.50 to	\$53.00
Cupola cast	45.00 to	46.00
Charging box cast		47.00
Heavy breakable	45.50 to	46.00
Machine shop turnings		31.00
Mixed borings, turnings		35.00
Shoveling turnings		35.00
Cast iron borings		35.00

CHICAGO (Delivered)	
No. 1 bundles	\$42.50
No. 2 bundles	\$39.00 to 41.50
Cupola cast	42.50 to 43.50
Stove plate	36.00 to 37.00
Heavy breakable	36.00 to 38.00
Drop broken machinery	44.00 to 45.00
Unstripped motor blocks	33.00 to 35.00
Charging box cast	41.00 to 42.00
Clean auto cast	43.50 to 45.00
Malleable	52.00 to 53.00
Machine shop turnings	27.50 to 28.00
Mixed borings, turnings	32.00 to 33.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	32.00 to 33.00

PHILADELPHIA (Delivered)	
Cupola cast .....	\$38.00 to \$39.00
Heavy breakable .....	41.00 to 42.00
Clean auto cast .....	45.00 to 46.00
Unstripped motor blocks .....	34.00 to 35.00
Charging box cast .....	40.00 to 41.00

CLEVELAND (Delivered)	
Machine shop turnings .....	\$29.00 to \$30.00
Mixed borings, turnings .....	33.00 to 35.00
Shoveling turnings .....	33.00 to 35.00
Cast iron borings .....	33.00 to 35.00
Unstripped motor blocks .....	38.00 to 39.00
Cupola cast .....	45.00 to 46.00
Heavy breakable .....	39.00 to 40.00
Drop broken machinery .....	51.00 to 52.00

**BIRMINGHAM (Delivered)**

Cupola cast .....	\$40.00 to \$41.00
Stove plate .....	36.00 to 37.00
Charging box cast .....	39.00 to 40.00
Heavy breakable .....	36.00 to 37.00
Drop broken machinery .....	42.00 to 43.00
Unstripped motor blocks .....	35.00 to 36.00

ST. LOUIS (Delivered)	
Heavy breakable .....	\$48.00
Stove plate .....	42.00
Mixed borings, turnings .....	33.00

**NEW YORK (Brokers' buying prices)**

Drop broken machinery .....	\$36.00 to \$38.00
Mixed yard cast .....	34.00 to 35.00
Charging box cast .....	36.00 to 38.00
Heavy breakable .....	34.00 to 35.00
Unstripped motor blocks .....	30.00 to 31.00

BOSTON (Brokers' buying prices)	
Cupola cast .....	\$32.00
Stove plate .....	32.00
Unstripped motor blocks .....	29.00
Heavy breakable .....	32.00

DETROIT (Brokers' buying prices)	
Cupola cast .....	\$46.00
Charging box .....	45.00
Heavy breakable .....	43.00
Cast iron brake shoes .....	39.00
Stove plate .....	44.00
Drop and mangled blocks .....	40.00
Drop broken machinery cast .....	50.00
Machine shop turnings .....	25.00
Mixed boring and turning .....	29.00
Shoveling turnings .....	29.00
Cast iron borings .....	29.00

CINCINNATI (Delivered)	
Unstripped motor blocks .....	\$40.00
Stove plate .....	45.00
Clean auto cast .....	47.00

BUFFALO (Delivered)	
Cupola cast . . . . .	\$41.00 to \$42.00
Machine shop turnings . . . . .	28.00
Shoveling turnings . . . . .	32.00
Cast iron borings . . . . .	32.00

SAN FRANCISCO (Delivered)	
Cupola cast .....	\$42.00
No. 2 bundles .....	29.00

LOS ANGELES (Delivered)	
Cupola cast .....	\$46.00
No. 2 bundles .....	29.00
Machine shop turnings .....	20.00

SEATTLE (Delivered)	
Cupola cast .....	\$26.50
Heavy breakable .....	\$2.00
No. 2 bundles .....	\$9.00

**SHIPPING POINT PRICES** (Except RR scrap)—for shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is \$1.25 per gross ton except: Memphis, 66¢; Great Lakes ports, \$1.50¢, and New England ports, \$1.75. Maximum shipping point price on No. 1 bundles (prime grade) in New York City is \$36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point.

### **Hamilton, Ontario**

(Consumers buying prices, del'd gross ton)

Hvy. melting steel	\$85.00
No. 1 bundles	\$6.00
No. 2 bundles	\$4.50
Mechanical bundles	\$3.00
Mixed, steel scrap	\$1.00
Rails, remelting	\$6.00
Rails, rerolling	\$3.00
Bushelings	\$0.00
Bushelings, prepared new factory	\$2.00
Bushelings, unprepared new factory	\$2.00
Short steel turnings	\$2.00
Mixed borings, turnings	\$2.00
Cast scrap	\$0.00

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## Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(cents per pound)				
Hot-rolled sheets	3.60	3.60	3.60	3.60
Cold-rolled sheets	4.35	4.35	4.35	4.35
Galvanized sheets (10 ga.)	4.80	4.80	4.80	4.80
Hot-rolled strip	3.50	3.50	3.50	3.50
Cold-rolled strip	4.75	4.75	4.75	4.75
Plate	3.70	3.70	3.70	3.70
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	36.75	36.75	36.75	36.50

Tin and Terneplate:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(dollars per base box)				
Tinplate (1.50 lb.) cokes	\$8.70	\$8.70	\$8.70	\$8.70
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	7.40
Special coated mfg. ternes	7.50	7.50	7.50	7.50

Bars and Shapes:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(cents per pound)				
Merchant bars	3.70	3.70	3.70	3.70
Cold finished bars	4.55	4.55	4.55	4.55
Alloy bars	4.30	4.30	4.30	4.30
Structural shapes	3.65	3.65	3.65	3.65
Stainless bars (No. 302)	31.50	31.50	31.50	31.25
Wrought iron bars	9.50	9.50	9.50	9.50

Wire	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(cents per pound)				
Bright wire	4.85	4.85	4.85	4.85

Rails	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(dollars per 100 lb)				
Heavy rails	\$3.60	\$3.60	\$3.60	\$3.60
Light rails	4.00	4.00	4.00	4.00

Semifinished Steel:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(dollars per net ton)				
Rerolling billets	\$56.00	\$56.00	\$56.00	\$56.00
Slabs, rerolling	56.00	56.00	56.00	56.00
Forging billets	66.00	66.00	66.00	66.00
Alloy blooms, billets, slabs	70.00	70.00	10.00	70.00

Wire Rod and Skelp:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(cents per pound)				
Wire rods	4.10	4.10	4.10	4.10
Skelp	3.35	3.35	3.35	3.35

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(per gross ton)				
Foundry, del'd. Phila.	\$58.19	\$58.19	\$58.19	\$57.77
Foundry, Valley	52.50	52.50	52.50	52.50
Foundry, Southern, Cin'ti	55.58	55.58	55.58	55.58
Foundry, Birmingham	48.88	48.88	48.88	48.88
Foundry, Chicago†	52.50	52.50	52.50	52.50
Basic, del'd. Philadelphia	57.27	57.27	57.27	56.92
Basic, Valley furnace	52.00	52.00	52.00	52.00
Malleable, Chicago†	52.50	52.50	52.50	52.50
Malleable, Valley	52.50	52.50	52.50	52.50
Charcoal, Chicago	70.56	70.56	70.56	70.56
Ferromanganese†	186.25	186.25	186.25	186.25

†The switching charges for delivery to foundries in the Chicago district is \$1 per ton.  
‡Average of U. S. prices quoted on Ferroalloy pages.

Scrap:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(per gross ton)				
No. 1 steel, Pittsburgh	\$43.00*	\$43.00*	\$43.00*	\$44.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	42.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	42.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos., Young'n	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	45.50†	45.50†	45.50†	49.00†
No. 1 cast, Philadelphia	38.50†	38.50†	41.50†	49.00†
No. 1 cast, Chicago	43.00†	43.00†	44.50†	49.00†

\* Basing Pt. † Shipping Pt.  
Not including broker's fee after Feb. 7, 1951.  
‡ Del'd., includes broker's fee.

Coke: Connellsville:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(per net ton at oven)				
Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75

Nonferrous Metals:	June 10, 1952	June 3, 1952	May 13, 1952	June 12, 1951
(cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.215	\$1.215	\$1.215	\$1.29
Zinc, East St. Louis	16.00	17.50	19.50	17.50
Lead, St. Louis	14.80	14.80	14.80	16.80
Aluminum, virgin	19.00	19.00	19.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	59.58
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	39.00	39.00	44.00	42.00

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

## Composite Prices

Finished Steel Base Price	June 10, 1952
One week ago	4.131¢ per lb.
One month ago	4.131¢ per lb.
One year ago	4.131¢ per lb.

High	Low
1952.... 4.131¢ Jan. 1	4.131¢ Jan. 1
1951.... 4.131¢ Jan. 2	4.131¢ Jan. 2
1950.... 4.131¢ Dec. 1	3.837¢ Jan. 3
1949.... 3.837¢ Dec. 27	3.705¢ May 3
1948.... 3.721¢ July 27	3.193¢ Jan. 1
1947.... 3.193¢ July 29	2.848¢ Jan. 1
1946.... 2.848¢ Dec. 31	2.464¢ Jan. 1
1945.... 2.464¢ May 29	2.396¢ Jan. 1
1944.... 2.396¢	2.396¢
1943.... 2.396¢	2.396¢
1942.... 2.396¢	2.396¢
1941.... 2.396¢	2.396¢
1940.... 2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939.... 2.35367¢ Jan. 3	2.27207¢ May 16
1938.... 2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937.... 2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936.... 2.32263¢ Dec. 28	2.05200¢ Mar. 10
1929.... 2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron	June 10, 1952
One week ago	52.77 per gross ton
One month ago	52.77 per gross ton
One year ago	52.69 per gross ton

High	Low
1952.... \$52.77 May 2	\$52.72 Jan. 1
1951.... 52.72 Oct. 9	52.69 Jan. 2
1950.... 52.69 Dec. 12	45.88 Jan. 3
1949.... 46.87 Jan. 18	45.88 Sept. 6
1948.... 46.91 Oct. 12	39.58 Jan. 6
1947.... 37.98 Dec. 30	30.14 Jan. 7
1946.... 30.14 Dec. 10	25.37 Jan. 1
1945.... 25.37 Oct. 28	23.61 Jan. 2
1944.... \$23.61	\$23.61
1943.... 23.61	23.61
1942.... 23.61	23.61
1941.... \$23.61 Mar. 20	\$23.45 Jan. 2
1940.... 23.45 Dec. 23	22.61 Jan. 2
1939.... 22.61 Sept. 19	20.61 Sept. 12
1938.... 23.25 Jan. 21	19.61 July 6
1937.... 32.25 Mar. 9	20.25 Feb. 16
1936.... 19.74 Nov. 24	18.73 Aug. 11
1871.... 18.71 May 14	18.21 Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel	June 10, 1952
One week ago	\$42.00 per gross ton
One month ago	42.00 per gross ton
One year ago	43.00 per gross ton

High	Low
1952.... \$42.00 Jan. 1	\$42.00 Jan. 1
1951.... 47.75 Jan. 30	42.00 Oct. 23
1950.... 45.13 Dec. 19	26.25 Jan. 3
1949.... 43.00 Jan. 4	19.33 June 23
1948.... 43.16 July 27	39.75 Mar. 9
1947.... 42.58 Oct. 28	29.50 May 20
1946.... 31.17 Dec. 24	19.17 Jan. 1
1945.... 19.17 Jan. 2	18.92 May 22
1944.... 19.17 Jan. 11	15.76 Oct. 24
1943.... \$19.17	\$19.17
1942.... 19.17	19.17
1941.... \$22.00 Jan. 7	18.92 May 22
1940.... 21.83 Dec. 30	16.04 Apr. 9
1939.... 22.50 Oct. 3	14.08 May 16
1938.... 15.00 Nov. 22	11.00 June 7
1937.... 21.92 Mar. 30	12.67 June 9
1936.... 17.75 Dec. 21	12.67 June 8
1929.... 17.58 Jan. 29	14.08 Dec. 8

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

## BRASS AND COPPER WIRE CLOTH

When you need Industrial Wire Cloth or Strainer Cloth, your nearest Chase Warehouse is the place to inquire for it.

Chase Brass and Copper Wire Cloth is made in meshes from No. 2 to No. 100 and in varying gauges for a wide variety of industrial uses. The mesh is uniform and the wires double crimped to keep openings square and true.

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WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

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Albany†	Chicago	Denver†	Kansas City, Mo.	Newark	Pittsburgh	San Francisco
Atlanta	Cincinnati	Detroit	Los Angeles	New Orleans	Providence	Seattle
Baltimore	Cleveland	Houston†	Milwaukee	New York	Rochester†	Waterbury
Boston	Dallas	Indianapolis	Minneapolis	Philadelphia	St. Louis	(sales office only)



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Chase Brass & Copper Co., Dept. 1A 652  
Waterbury 20, Conn.

Please send me your FREE book on Chase Brass & Copper Wire Cloth.

Name

Position

Firm

Address

City  State

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.													
STEEL PRICES		INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL- ING	SHAPES STRUCTURALS		STRIP				
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton				Steel Sheet	Carbon	Hi Str. Low Alloy	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy
EAST	Bethlehem, Pa.					\$70.00 B3			3.70 B3	5.50 B3					
	Buffalo, N. Y.			\$56.00 B3	\$66.00 B3, R3	\$70.00 B3, R3		4.45 B3	3.70 B3	5.50 B3	3.50 B3, R3	4.65 B3	4.95 B3	6.40 B3	
	Claymont, Del.														
	Coatesville, Pa.														
	Censhohocken, Pa.				\$73.00 A2	\$77.00 A2					3.90 A2		5.55 A2		
	Harrisburg, Pa.														
	Hartford, Conn.														
	Johnstown, Pa.			\$56.00 B3	\$66.00 B3	\$70.00 B3			3.70 B3	5.50 B3	3.50 B3				
	Newark, N. J.														
	New Haven, Conn.											5.15 A5 5.85 D1			
	Phoenixville, Pa.								5.90 P2						
	Putnam, Conn.														
	Sparrows Pt., Md.										3.50 B3	4.65 B3	4.95 A5, B3	6.40 B3	
	Worcester, Mass.														
MIDDLE WEST	Trenton, N. J.											6.00 R4			
	Alton, Ill.										3.95 L1				
	Ashland, Ky.										3.50 A7				
	Canton-Massillon				\$66.00 R3	\$70.00 R3 \$66.00 T5									
	Chicago, Ill.			\$56.00 U1	\$66.00 U1, R3,W8	\$70.00 U1, R3,W8		4.45 U1	3.65 U1, W8	5.50 U1	3.50 A1, W8	4.90 A1, I3			
	Cleveland, Ohio				\$66.00 R3							4.65 A5,J3		6.55 A5 6.70 J3	
	Detroit, Mich.		\$54.00 R5		\$69.00 R5	\$73.00 R5					4.40 M2 3.80 G3	4.85 G3 5.45 M2 5.60 R5,D1	5.95 G3		
	Duluth, Minn.														
	Gary, Ind. Harbor, Indiana			\$56.00 U1	\$66.00 U1	\$70.00 U1, Y1		4.45 I3	3.65 U1, I3	5.50 U1, I3 6.00 Y1	3.50 U1, Y1,I3	4.90 I3	5.30 U1, I3 5.80 Y1		
	Granite City, Ill.														
	Kokomo, Ind.														
	Middletown, Ohio											4.65 A7			
	Niles, Ohio Sharon, Pa.										4.00 S1	5.35 S1	5.40 S1	6.55 S1	
	Pittsburgh, Pa.	\$52.00 U1	\$54.00 U1, C11	\$56.00 U1	\$66.00 U1	\$70.00 U1, C11	3.35 U1 3.45 J3	4.45 U1	3.65 U1, J3	5.50 U1, J3	4.00 S9,S7 3.75 A3 3.50 J3,A7	4.65 J3,A7 5.00 A3 5.35 B4,S7			
	Pertsmouth, Ohio														
	Weirton, Wheeling, Follansbee, W. Va.								3.90 W3		3.60 W3	4.65 W3,F3	5.75 W3	7.20 W3	
	Youngstown, Ohio					\$70.00 Y1, C10	3.35 U1, R3			6.00 Y1	3.50 U1, R3,Y1	4.65 R3,Y1 5.25 C5,T4 5.35 B4	5.30 U1, R3 5.80 Y1	6.55 R3 7.05 Y1	
WEST	Fontana, Cal.	\$79.00 K1	\$80.00 K1	\$75.00 K1	\$85.00 K1	\$89.00 K1			4.25 K1	6.10 K1	4.75 K1	6.30 K1	6.20 K1	6.95 K1	
	Geneva, Utah				\$66.00 C7				3.65 C7	5.50 C7					
	Kansas City, Mo.								4.25 S2		4.10 S2				
	Los Angeles, Calif.				\$85.00 B2	\$90.00 B2			4.25 B2, C7	6.05 B2	4.25 B2,C7	6.40 C1	6.05 B2		
	Minnequa, Colo.								4.10 C6		4.55 C6				
	San Francisco, Cal.				\$85.00 B2				4.20 B2	6.00 B2	4.25 C7,B2		6.05 B2		
	Seattle, Wash.	\$73.00 S11			\$85.00 B2				4.30 B2	6.10 B2	4.50 B2		6.30 B2		
	Atlanta, Ga.										4.05 A8				
SOUTH	Birmingham, Ala. Alabama City, Ala.			\$56.00 T2	\$66.00 T2				3.65 R3,T2	5.50 T2	3.50 R3,T2		5.30 T2		
	Houston, Texas		\$62.00 S2		\$74.00 S2	\$78.00 S2			4.05 S2		3.90 S2				



Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

**STEEL PRICES**

**SHEETS**

**WIRE ROD**

**TINPLATE†**

**BLACK PLATE**

Hot-rolled 18 ga. & heavy.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Tern 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.
3.60 B3	4.35 B3				5.40 B3	6.55 B3		4.10 W6				
6.00 A2					5.65 A2					† Special coated mfg turns deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb, deduct \$2.20 from 1.25-lb coke base box. * COKES: 1.50-lb, add 25¢. ELECTRO: 0.50-lb, add 25¢; 0.75-lb, add 65¢.		
3.60 B3	4.35 B3	4.80 B3			5.40 B3	6.55 B3	6.75 B3	4.20 B3	\$8.55 B3	\$7.25 B3		
								4.40 A5				
								4.20 R4				
								4.40 L1				
3.60 A7		4.80 A7	4.65 A7									
		4.80 R3										
3.60 W8					5.40 U1			4.10 A5, R3, N4				
3.60 R3, J3	4.35 R3, J3		4.65 R3		5.40 R3, J3	6.55 R3, J3		4.10 A5				
3.60 G3 4.40 M3	4.55 G3				5.95 G3	7.10 G3						
3.60 U1, Y1, J3	4.35 U1, Y1, J3	4.80 U1, J3	4.65 U1, J3	5.20 U1	5.40 U1, J3 5.90 Y1	6.55 U1, J3 7.05 Y1		4.10 Y1	\$8.45 B3, U1, Y1	\$7.15 U1, J3	5.85 U1 5.30 Y1	
4.30 G2	5.05 G2	5.50 G2	5.35 G2							\$7.35 G2	6.05 G2	
		5.20 C9										
	4.35 A7		4.65 A7	5.20 A7								
5.25 N3 4.00 S1		6.00 N3		6.00 N3	5.40 S1							
3.60 U1, J3, A7 3.75 A3	4.35 U1, J3, A7	4.80 U1	4.65 U1		5.40 U1, J3	6.55 U1, J3	7.20 U1	4.10 A5 4.30 P6	\$8.45 U1, J3	\$7.15 U1, J3	5.85 U1	
								4.30 P7				
3.60 W3, W5	5.35 F3 4.35 W3, W5	4.80 W3, W5		5.20 W3, W5	5.75 W3	6.90 W3			\$8.45 W3, W5	\$7.15 W3, W5	6.15 W5 5.85 F3	
3.60 U1, R3, Y1	4.35 R3, Y1	5.50 R1	4.65 Y1	6.05 E2	5.40 U1, R3 5.90 Y1	6.55 R3 7.05 Y1	6.05 R1, E2	4.10 Y1	\$8.45 R3	\$7.15 R3		
4.55 K1	5.30 K1				6.35 K1	7.50 K1		4.90 K1				
3.70 C7												
4.30 C7		5.55 C7					5.40 C7	4.90 B2, C7	\$9.20 C7	\$7.90 C7		
								4.35 C6				
4.30 C7	5.30 C7	5.55 C7										
3.60 R3, T2	4.35 T2	4.80 R3, T2			5.40 T2		4.75 R3	4.10 R3, T2	\$8.55 T2	\$7.25 T2		
								4.50 S2				

Bethlehem, Pa.
Buffalo, N. Y.
Claymont, Del.
Coatesville, Pa.
Consheocken, Pa.
Harrisburg, Pa.
Hartford, Conn.
Johnstown, Pa.
Newark, N. J.
New Haven, Conn.
Phoenixville, Pa.
Putnam, Conn.
Sparrows Pt., Md.
Worcester, Mass.
Trenton, N. J.
Alton, Ill.
Ashland, Ky.
Canton-Massillon
Chicago, Ill.
Cleveland, Ohio
Detroit, Mich.
Duluth, Minn.
Gary, Ind. Harbor, Indiana
Granite City, Ill.
Kokomo, Ind.
Middletown, Ohio
Niles, Ohio
Sharon, Pa.
Pittsburgh, Pa.
Portsmouth, Ohio
Weirton, Wheeling, Follansbee, W. Va.
Youngstown, Ohio
Fentona, Cal.
Geneva, Utah
Kansas City, Mo.
Los Angeles, Cal.
Minnequa, Colo.
San Francisco, Cal.
Seattle, Wash.
Atlanta, Ga.
Birmingham, Ala. Alabama City, Ala.
Houston, Texas

IRON AGE		<i>Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.</i>										
	<b>STEEL PRICES</b>	BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Milg's Bright
EAST	Bethlehem, Pa.				4.30 B3	5.40 B3	5.55 B3					
	Buffalo, N. Y.	3.70 B3,R3	3.70 B3,R3	4.60 B5	4.40 B3,R3	5.40 B3	5.55 B3	3.70 B3				4.85 W8
	Claymont, Del.							4.15 C4		4.85 C4		
	Colesville, Pa.							4.15 L4		5.25 L4		
	Conshohocken, Pa.							4.15 A2	4.75 A2	5.05 A2	5.90 A2	
	Harrisburg, Pa.							6.30 C3	6.30 C3			
	Hartford, Conn.			5.10 R3		5.85 R3						
	Johnstown, Pa.	3.70 B3	3.70 B3		4.30 B3		5.55 B3	3.70 B3		4.75 B3	5.65 B3	4.85 B3
	Newark, N. J.			5.00 W10		5.75 W10						
	New Haven, Conn.											
	Phoenixville, Pa.											
	Putnam, Conn.			5.10 W10								
	Sparrows Point, Md.		3.70 B3					3.70 B3		4.75 B3	5.65 B3	4.95 B3
	Worcester, Mass.					5.75 A5						5.15 A5,W8
	Trenton, N. J.											
	Alton, Ill.	4.15 L1										5.05 L1
	Ashland, Ky.							3.70 A7				
	Canton-Massillon	3.70 R3		4.55 R3,R2	3.95 T5 4.30 R3	4.90 T5 5.40 R3,R2						
	Chicago, Ill.	3.70 U1, R3, W8	3.70 R3	4.55 A5,B5, W8,W1	4.30 U1,R3 W8	5.40 R3,W8 W10,B5,L2 5.45 A5		3.70 U1,W8	4.75 U1	4.75 U1	5.65 U1	5.10 W7 4.85 R3,A5 K2,N4
	Cleveland, Ohio	3.70 R3	3.70 R3	4.55 A5,C13		5.45 A5	5.55 R3,J3	3.70 R3,J3	4.75 J3		5.65 R3,J3	4.85 A5,C13
MIDDLE WEST	Detroit, Mich.	3.85 R5		4.70 P8,R5 4.80 P3	4.45 R5 4.65 G3	5.50 R5 5.55 P8 5.60 P3						
	Duluth, Minn.											4.85 A5
	Gary Ind. Harbor Indiana	3.70 U1, Y1, J3	3.70 U1,I3, Y1	4.55 R3,M5, L2	4.30 U1,I3, Y1	5.40 R3,M5, L2	5.55 U1,I3 6.05 Y1	3.70 U1,I3, Y1	4.75 J3	4.75 U1	5.65 U1,I3 6.15 Y1	5.10 M4
	Granite City, Ill.							4.40 G2				
	Kokomo, Ind.											4.95 C9
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							3.95 S1		5.20 S1	5.70 S1	
	Pittsburgh, Pa.	3.70 U1,J3	3.70 U1,J3	4.55 R3,A5, J3,S8,W10, C8	4.30 U1,C11	5.40 C11,S8, W10,C8,A5	5.55 U1,J3	3.70 U1,J3	4.75 U1	4.75 U1	5.65 U1,J3	4.85 A5,J3 5.10 P6
	Portsmouth, Ohio											5.15 P7
	Weirton, Wheeling, Fellansbee, W. Va.	3.85 W3						4.00 W3,W5				
	Youngstown, Ohio	3.70 U1,R3, Y1	3.70 U1,R3, Y1	4.55 Y1,F2	4.30 U1, Y1, C10	5.40 Y1,C10, F2	5.55 U1 6.05 Y1	3.70 U1,R3, Y1			5.65 R3 6.15 Y1	4.85 Y1
	Fontana, Cal.	4.40 K1	4.40 K1		5.35 K1		6.60 K1	4.30 K1		5.70 K1	6.25 K1	
	Geneva, Utah							3.70 C7			5.65 C7	
WEST	Kansas City, Mo.	4.30 S2	4.30 S2		4.90 S2							5.45 S2
	Los Angeles, Cal.	4.40 C7,B2	4.40 C7,B2		5.35 B2		6.25 B2					5.90 C7,B2
	Minnequa, Colo.	4.15 C6	4.50 C6					4.50 C6				5.10 C6
	San Francisco, Cal.	4.45 B2 4.40 C7	4.45 B2 4.40 C7				6.30 B2					5.90 C7
	Seattle, Wash.	4.45 B2	4.45 B2				6.30 B2	4.60 B2			6.55 B2	
	Atlanta, Ga.	4.25 A8	4.25 A8									5.10 A8
	Birmingham, Ala. Alabama City, Ala.	3.70 R3,T2	3.70 R3,T2				5.55 T2	3.70 R3,T2			5.65 T2	4.85 R3,T2
	Houston, Tex.	4.10 S2	4.10 S2		4.70 S2			4.10 S2				5.25 S2

## Key to Steel Producers

With Principal Offices

42	Acme Steel Co., Chicago
43	Alan Wood Steel Co., Conshohocken, Pa.
44	Allegheny Ludlum Steel Corp., Pittsburgh
45	American Clad Metals Co., Carnegie, Pa.
46	American Steel & Wire Div., Cleveland
47	Angell Nail & Chaplet Co., Cleveland
48	Armco Steel Corp., Middletown, O.
49	Atlantic Steel Co., Atlanta, Ga.
50	Babcock & Wilcox Tube Co., Beaver Falls, Pa.
51	Bethlehem Steel Co., Bethlehem, Pa.
52	Blair Strip Steel Co., New Castle, Pa.
53	Bliss & Laughlin Inc., Harvey, Ill.
54	California Cold Rolled Steel Corp., Los Angeles
55	Carpenter Steel Co., Reading, Pa.
56	Central Iron & Steel Co., Harrisburg, Pa.
57	Claymont Steel Corp., Claymont, Del.
58	Cold Metal Products Co., Youngstown
59	Colorado Fuel & Iron Corp., Denver
60	Columbia-Geneva Steel Div., San Francisco
61	Columbia Steel & Shifting Co., Pittsburgh
62	Continental Steel Corp., Kokomo, Ind.
63	Copperweld Steel Co., Glassport, Pa.
64	Crucible Steel Co. of America, New York
65	Cumberland Steel Co., Cumberland, Md.
66	Cuyahoga Steel & Wire Co., Cleveland
67	Detroit Steel Corp., Detroit
68	Detroit Tube & Steel Div., Detroit
69	Driver Harris Co., Harrison, N. J.
70	Eastern Stainless Steel Corp., Baltimore
71	Empire Steel Co., Mansfield, O.
72	Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
73	Fitzsimmons Steel Corp., Youngstown
74	Follansbee Steel Corp., Follansbee, W. Va.
75	Globe Iron Co., Jackson, O.
76	Granite City Steel Co., Granite City, Ill.
77	Great Lakes Steel Corp., Detroit
78	Hanna Furnace Corp., Detroit
79	Ingersoll Steel Div., Chicago
80	Inland Steel Co., Chicago
81	Interlake Iron Corp., Cleveland
82	Jackson Iron & Steel Co., Jackson, O.
83	Jenop Steel Corp., Washington, Pa.
84	Jones & Laughlin Steel Corp., Pittsburgh
85	Joslyn Mfg. & Supply Co., Chicago
86	Kaiser Corp., Oakland, Cal.
87	Keystone Steel & Wire Co., Peoria
88	Koppers Co., Granite City, Ill.
89	Laclede Steel Co., St. Louis
90	La Salle Steel Co., Chicago
91	Lone Star Steel Co., Dallas
92	Lukens Steel Co., Coatesville, Pa.
93	Mahoning Valley Steel Co., Niles, O.
94	McLouth Steel Corp., Detroit
95	Mercer Tube & Mfg. Co., Sharon, Pa.
96	Mid-States Steel & Wire Co., Crawfordsville, Ind.
97	Monarch Steel Co., Inc., Hammond, Ind.
98	Mystic Iron Works, Everett, Mass.
99	National Supply Co., Pittsburgh
100	National Tube Co., Pittsburgh
101	Niles Rolling Mills Co., Niles, O.
102	Northwestern Steel & Wire Co., Sterling, Ill.
103	Oliver Iron & Steel Co., Pittsburgh
104	Page Steel & Wire Div., Monessen, Pa.
105	Phoenix Iron & Steel Co., Phoenixville, Pa.
106	Pilgrim Drawn Steel Div., Plymouth, Mich.
107	Pittsburgh Coke & Chemical Co., Pittsburgh
108	Pittsburgh Screw & Bolt Co., Pittsburgh
109	Pittsburgh Steel Co., Pittsburgh
110	Portsmouth Div., Detroit Steel Corp., Detroit
111	Plymouth Steel Co., Detroit
112	Reeves Steel & Mfg. Co., Dover, O.
113	Reliance Div., Eaton Mfg. Co., Massillon, O.
114	Republic Steel Corp., Cleveland
115	Roebing Sons Co. (John A.), Trenton, N. J.
116	Rotary Electric Steel Co., Detroit
117	Sharon Steel Corp., Sharon, Pa.
118	Sheffield Steel Corp., Kansas City
119	Shenango Furnace Co., Pittsburgh
120	Simonds Saw & Steel Co., Fitchburg, Mass.
121	Sloss Sheffield Steel & Iron Co., Birmingham
122	Standard Forging Corp., Chicago
123	Stanley Works, New Britain, Conn.
124	Superior Drawn Steel Co., Monaca, Pa.
125	Superior Steel Corp., Carnegie, Pa.
126	Sweet's Steel Co., Williamsport, Pa.
127	Tonawanda Iron Div., N. Tonawanda, N. Y.
128	Tennessee Coal, Iron & R. R. Co., Birmingham
129	Tennessee Products & Chem. Corp., Nashville
130	Thomas Steel Co., Warren, O.
131	Tumken Steel & Tube Div., Canton, O.
132	Tremont Nail Co., Wareham, Mass.
133	United States Steel Co., Pittsburgh
134	Universal-Cyclops Steel Corp., Bridgeville, Pa.
135	Wallingford Steel Co., Wallingford, Conn.
136	Washington Steel Corp., Washington, Pa.
137	Weirton Steel Co., Weirton, W. Va.
138	Wheatland Tube Co., Wheatland, Pa.
139	Wheeling Steel Corp., Wheeling, W. Va.
140	Wickwire Spencer Steel Co., Buffalo
141	Wilson Steel & Wire Co., Chicago
142	Wisconsin Steel Co., S. Chicago, Ill.
143	Woodward Iron Co., Woodward, Ala.
144	Wycoff Steel Co., Pittsburgh
145	Youngstown Sheet & Tube Co., Youngstown

## Steel Prices

WARE-HOUSES		Base price, f.o.b., dollars per 100 lb.											
		Sheets		Strip		Plates		Shapes		Bars		Alloy Bars	
		Hot-Rolled	Cold-Rolled (15 gage)	Hot-Rolled	Cold-Rolled	Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As Rolled	Cold-Drawn A 4140 Annealed	
Baltimore	\$20	5.54	6.80	8.20	6.03	6.13	6.13	6.01	6.63				
Birmingham	15	5.59	6.37	7.20	5.54	5.85	5.70	5.52	7.60				
Boston	20	6.25	7.03	8.48	6.15	7.74	6.38	6.20	6.05	10.25	10.55	11.95	12.15
Buffalo	20	5.50	6.28	8.20	5.86	5.88	5.80	5.52	6.18	10.15	10.45	11.80	12.10
Chicago	20	5.54	6.32	8.26	5.49	5.98	5.82	5.55	6.45				
Chicago	20	5.54	6.32	7.85	5.49	5.65	5.65	5.47	6.05	10.10			11.75
Cincinnati	15	5.87	6.39	8.32	5.79	5.70	6.12	5.77	6.66	10.52			12.17
Cleveland	20	5.54	6.32	7.96	5.45	5.82	5.95	5.77	6.15	10.21			11.86
Detroit	20	5.74	6.49	8.55	5.78	5.95	5.95	5.95	6.40				
Detroit	20	5.74	6.49	8.55	5.78	6.17	6.12	5.76	6.60	10.37			12.12
Houston	20	6.35	7.37	8.57	6.15	6.39	6.32	6.38	8.38	10.95	11.12	11.40	12.62
Indianapolis	del'd	5.94	6.72	8.25	5.89	6.42	6.35	6.83		11.25			12.90
Indianapolis	del'd	5.94	6.72	8.25	5.89	6.10	6.05	5.87	6.80	10.50			
Kansas City	20	6.22	7.44	8.66	6.10	7.81	6.38	6.43	6.20	10.00	10.10	11.50	11.80
Los Angeles	20	6.30	8.10	9.30	6.40	10.45	6.30	6.30	6.25	8.15	11.30	13.05	13.50
Memphis	10	6.25	7.03	7.51	6.20		6.36	6.36	6.33	7.11			
Milwaukee	20	5.71	6.48	8.02	5.64	5.81	5.82	5.64	6.31				
New Orleans	15	5.98	7.01	8.26	5.93	5.87	6.09	5.91	7.02	10.17			
New York	30	6.09	6.90	8.27	6.36	6.46	6.08	6.22	7.03	10.45	10.49	12.10	12.14
New York	30	6.52	6.91	8.45	7.19	6.88	6.40	6.42	7.13	10.75			12.40
Norfolk	20	6.68			6.33	6.20	6.20	5.95	7.30				
Philadelphia	25	5.70	6.72	8.10	6.04	7.15	6.05	5.84	6.02	9.82	10.23	11.82	11.88
Pittsburgh	20	6.07	7.22	8.38	6.08	6.19	6.09	6.27	7.16	10.17	10.47		12.12
Pittsburgh	20	5.54	6.32	7.85	5.50	5.65	5.65	5.47	6.15	10.10			11.75
Portland	20	7.25	8.64	9.10	7.30	5.70	6.80	7.19	8.65				
Salt Lake City	20	7.95		9.80	8.00		7.45	7.60	7.95				
San Francisco	15	6.51	7.88	9.10	6.45	10.45	6.38	6.25	6.34	8.15	11.30	13.05	13.50
Seattle	20	6.64	8.23	9.25			6.40	6.45	8.20				
St. Louis	20	6.14	8.38	9.45	7.05		6.75	6.37	6.60	8.89			
St. Paul	15	6.81	8.98		7.35		6.90	6.57	6.80	8.94			
St. Paul	15	5.73	6.62	8.15	5.77	7.66	6.02	6.05	5.77	6.43	10.08	10.40	11.73
St. Paul	15	5.84	7.15		5.79	8.15	6.10	6.22	5.80	6.70			
St. Paul	15	6.14	6.92	8.45	6.09		6.25	6.25	6.07	6.75			

\* Metropolitan area delivery.

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb. or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanizing sheets, for quantity.

EXCEPTIONS: (1) 500 to 1499 lb.

## STAINLESS STEELS

Base price, cents per lb., f.o.b., mill.

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs, billets, rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars, wires, structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip, hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip, cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2; (type 316 add 4.5¢) J2; Baltimore, Md., E1; Middletown, O., A7; Massillon, O., R3; Gary, Ind., U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, Ind., J4; Lockport, N. Y., R4.  
Strip: Midland, Pa., C11; Cleveland, Pa., A3; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; (type 316 add 4.5¢) W; Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, Mich., C2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, Pa., C5; Lockport, N. Y., S4; Sharon, Pa., S1 (type 301 add ¼¢); Butler, Pa., A7; Wallingford, Conn., W1.  
Bars: Baltimore, Md., A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1; F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, Ill., U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, Ill., A5; Lockport, N. Y., S4; Canton, O., T5; Ft. Wayne, Ind., J4.  
Wires: Waukegan, Ill., A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, Ind., J4; Harrison, N. J., D3; Baltimore, Md., A7; Dunkirk, N. Y., A3; Monessen, Pa., F1; Syracuse, N. Y., C11; Bridgeville, Pa., U2.  
Structurals: Baltimore, Md., A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, N. Y., C11.  
Plates: Brackenridge, Pa., A3 (type 416 add ¼¢); Butler, Pa., A7; Chicago, Ill., U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Lockport, N. Y., S4; Middletown, O., A7; Washington, Pa., J2; Cleveland, Massillon, R3.  
Forged discs, die blocks, rings: Pittsburgh, Pa., C11; Syracuse, N. Y., C11; Ferndale, Mich., A3; Washington, Pa., J2.  
Forging billets: Midland, Pa., C11; Baltimore, Md., A7; Washington, Pa., J2; McKeesport, Pa., F1; Massillon, Canton, O., R3; Watervliet, N. Y., A3; Pittsburgh, Pa., C11; Syracuse, N. Y., C11.  
ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.  
WASHINGTON STEEL—Slightly lower on 300 series except where noted.



# Miscellaneous Prices

## PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD												SEAMLESS					
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2 In.		3 In.		3 1/2 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
<b>STANDARD</b>																		
T. & C.																		
Sparrows Pt. B3	34.0	12.0	37.0	16.0	39.0	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0				
Cleveland R3	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0				
Oakland K1	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0				
Pittsburgh J3	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	8.0	32.5	11.5
Pittsburgh N2	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5
Alton, Ill. L1	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0				
Sharon M3	36.0	13.0	39.0	17.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0				
Pittsburgh N1	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5		32.5	34.5
Wheeling W3	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0				
Wheeling W4	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0				
Youngstown Y1	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5
<b>EXTRA STRONG, PLAIN ENDS</b>																		
Sparrows Pt. B3	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0				
Cleveland R3	35.5	15.0	39.5	19.0	41.5	22.5	42.9	23.0	42.5	24.0	43.0	24.5	43.5	25.0				
Oakland K1	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0				
Pittsburgh J3	35.5	13.5	39.5	17.5	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.0	7.5	33.0	12.0
Pittsburgh N2	35.5	13.5	39.5	17.5	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.0	10.0	33.0	14.0
Alton, Ill. L1	32.5	12.0	36.5	16.0	38.5	19.5	39.0	20.0	39.5	21.0	40.0	21.5	40.5	22.0				
Sharon M3	35.5	14.0	39.5	18.0	41.5	22.5	42.9	23.0	42.5	24.0	43.0	24.5	43.5	25.0				
Pittsburgh N1	35.5	15.0	39.5	19.0	41.5	22.5	42.9	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0		33.0	36.5
Wheeling W3	35.5	15.0	39.5	19.0	41.5	22.5	42.9	23.0	42.5	24.0	43.0	24.5	43.5	25.0				
Wheeling W4	35.5	13.5	39.5	17.5	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0				
Youngstown Y1	35.5	15.0	39.5	19.0	41.5	22.5	42.9	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0

Galvanized discounts based on zinc, at 17¢ per lb., East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 1/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 3 1/2 in., 1 pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.5¢ to 17.50¢ per lb., use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only, butt-weld and seamless, 1 pt. higher discount. Plain ends, butt-weld and seamless, 3 in. and under, 3/4 pts. higher discount. Butt-weld jobbers' discount, 5 pct. East St. Louis zinc price now 16.0¢.

## COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa.	\$14.50 to \$15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$17.50 to \$18.00
Foundry, oven coke	
Buffalo, del'd	\$26.69
Chicago, f.o.b.	\$23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

## ELECTRICAL SHEETS

22 Ga. H-R cut length	Armature	Elec.	Meter	Dynamo	Transf. 72	Transf. 65	Transf. 58
F.o.b. Mill Cents Per Lb.							
Beech Bottom W5	7.25	8.50	9.30	9.85	10.40	11.10	
Brackenridge A3	7.25	8.50	9.30	9.85			
Granite City C3	7.95	9.20					
Ind. Harbor B3	6.75	7.25					
Mannsfeld E2	7.25	7.75	9.00	9.80			
Niles, O. N3	7.05	7.55					
Vandergrift U1	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren, O. R3	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville A7	6.75	7.25	8.50	9.30	9.85	10.40	11.10

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery	Low Phos. Charcoal
Bethlehem B3	54.00	54.50	55.00	55.50			
Birmingham R3	48.38	48.88					
Birmingham W9	48.38	48.88					
Birmingham S5	48.38	48.88					
Buffalo R3	52.00	52.50	53.00				
Buffalo H1	52.00	52.50	53.00			63.75	
Chicago H4	52.00	52.50	52.50	53.00			
Cleveland A5	52.00	52.50	52.50	53.00	57.00		
Cleveland R3	52.00	52.50	52.50				
Daingerfield, Tex. L3	48.00	48.50	48.50				
Duluth H4	52.00	52.50	52.50	53.00			
Erie H4	52.00	52.50	52.50	53.00			
Everett, Mass. M6		59.75	60.25				
Fontana K1	58.00	58.50					
Geneva, Utah U1 Y1	52.00	52.50	52.50	53.00			
Granite City, Ill. K3	53.90	54.40	54.90				
Hubbard, Ohio Y1	52.00	52.50	52.50				
Ironton, Utah C7	52.00	52.50					
Jackson, Ohio J1 G1						62.50	66.00
Lyle, Tenn. J3							
Minneapolis P6	54.00						
Neville Island P4	52.00	52.50	52.50	53.00			
Pittsburgh U1	52.00			53.00			
Sharpsville S3	52.00			53.00			
Steelton B3	54.00	54.50	55.00	55.50	60.00		
Swedeland A2	56.00	56.50	57.00	57.50			
Toledo H4	52.00	52.50	52.50	53.00			
Tray, N. Y. R3	54.00	54.50	55.00		60.00		
Youngstown Y1	52.00	52.50	52.50	53.00			
N. Tonawanda, N. Y. T1		52.50	53.00				

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery iron: Add \$1.50 per net ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferro-silicon prices are \$1 over comparable silvery iron.

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	22.67	26.66	21.99	25.86
	2 1/2	12	30.48	35.84	29.57	34.76
	3	12	33.90	39.90	32.09	38.70
	3 1/2	11	42.37	49.89	41.10	48.30
	4	10	52.60	61.88	51.03	60.02
National Tube	2	13	21.62	26.48		
	2 1/2	12	29.65	36.32		
	3	12	34.00	41.64		
	3 1/2	11	40.34	49.41		
	4	10	51.21	62.72		
Pittsburgh Steel	2	13		27.00		
	2 1/2	12	30.40	37.15		
	3	12	34.95	42.50		
	3 1/2	11	41.48	50.54		
	4	10	52.65	64.16		

## CAST IRON WATER PIPE

Per Net Ton  
6 to 24-in., del'd Chicago \$105.30 to \$108.80  
6 to 24-in., del'd N.Y. 108.50 to 109.50  
6 to 24-in., Birmingham 91.50 to 96.00  
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipment less \$123.00 to \$130.00  
Class "A" and gas pipe \$5 extra; 4-in. pipe is \$5 a ton above 6-in.

## C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.00	1.01-1.35
Bridgeport, Conn. S7	5.35	6.80	7.40	9.35	11.61
Carnegie, Pa. S9		6.80	7.40	9.35	11.61
Cleveland A5	4.65	6.45	7.40	9.35	11.61
Detroit D1	5.60	6.65	7.25		
New Castle, Pa. B4	5.35	6.80	7.40	9.35	
New Haven, Conn. D1	5.85	6.75	7.35		
Sharon, Pa. S1	5.35	6.80	7.40	9.35	11.61
Weirton, W. Va. W3	5.35	6.80	7.40	9.35	11.61
Worcester, Mass. A5	4.95	6.75	7.70	9.65	11.95
Youngstown C5		6.80	7.40	9.35	11.61

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails									
	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.
Alabama City R3	118	126		123					136	5.70
Aliquippa, Pa. J3	118	132							136	5.70
Atlanta A8	121	133							143	5.95
Bartonsville K2	118	130							143	5.70
Buffalo W6									4.85	
Cleveland A6	125									5.70
Cleveland A5										5.70
Crawfordsville M4		132							145	5.95
Donora, Pa. A5	118	130		123	140				140	5.70
Duluth A5	118	130		123	140				140	5.70
Fairfield, Ala. T2	118	130							140	5.70
Houston S2	126	138							148	6.10
Johnston, Pa. B3	118	130							140	5.70
Joliet, Ill. A5	118	130		123					140	5.70
Kokomo, Ind. C9	120	132							142	5.80
Los Angeles B2									6.45	
Kansas City S2	130			135					152	6.30

## Miscellaneous Prices

### RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rail	Light Rail	Joint Bars	Track Spikes	Adles	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1...	3.60	4.00	4.70					
Chicago R3...				6.15				
Cleveland R3...						9.35		
Ensley T2...	3.60	4.00						
Fairfield T2...		4.00	4.70	6.15	5.60		4.50	9.80
Gary U1...	3.60	4.00					4.50	
Ind. Harbor I3...	3.60		4.70	6.15	5.60		4.50	
Johannston B3...		4.00			5.60			
Juliet U1...		4.00	4.70					
Kansas City S2...				6.40				9.85
Lackawanna B3...	3.60	4.00	4.70				4.50	
Lebanon B3...				6.15		9.35		9.85
Minnequa C6...	3.60	4.50	4.70	6.15			4.50	9.85
Pittsburgh R3...						9.35		9.85
Pittsburgh O1...								9.85
Pittsburgh P3...				6.15				
Pittsburgh J3...								
Pitt'g, Cal. C7...							4.65	
Seattle B2...				6.45			4.65	
Steelton B3...	3.60		4.70				4.65	
Struthers Y1...				6.15				4.65
Terrace C7...								
Youngstown R3...				6.15				

### TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.505
18	4	1	—	5	\$2.13
18	4	2	—	—	\$1.65
1.5	4	1.5	8	—	\$1.06
6	4	2	6	—	\$6.56
High-carbon chromium					\$3.56
Oil hardened manganese					35¢
Special carbon					\$2.56
Extra carbon					27¢
Regular carbon					\$3.36

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

### CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Cotestville, Pa. L4	\$29.5	
Washington, Pa. J2	\$29.5	
Claymont, Del. C4	\$28.00	
Conshohocken, Pa. A2		\$27.50
New Castle, Ind. J2	\$29.77	\$26.24
Nickel-carbon		
10 pct Cotestville, Pa. L4	32.5	
Inconel-carbon		
10 pct Cotestville, Pa. L4	40.5	
Monel-carbon		
10 pct Cotestville, Pa. L4	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. A4		77.00
Aluminized steel sheets, hot dip, Butler, Pa. A7		7.75

\* Includes annealing and pickling, or sandblasting.

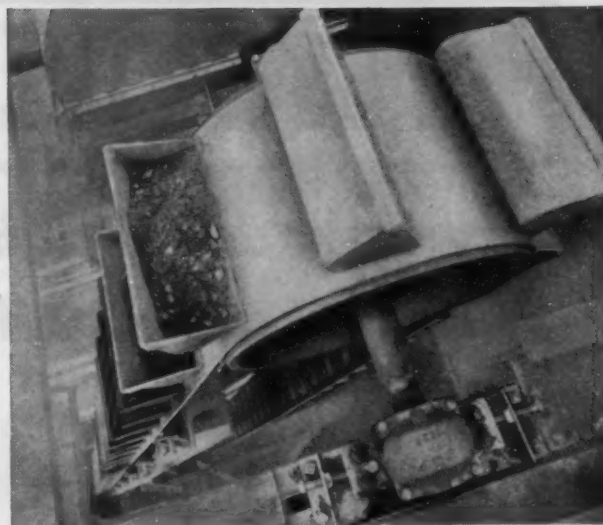
### ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2 1/2	24, 30	23.15
2	24, 30	25.36
CARBON		
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

### FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill.  
Price, net ton; Effective CaF<sub>2</sub> content:  
70% or more \$43.00  
60% or less 40.00



## SAVINGS ARE UP... MAINTENANCE DOWN

With Hewitt-Robins  
Belt & Bucket Elevators

Whatever your specific requirements, a Hewitt-Robins Belt & Bucket Elevator offers you a lower-cost, more dependable method of handling your bulk materials . . . there are 58 standard types, styles and sizes to choose from.

Hewitt-Robins Belt & Bucket Elevators are equipped with load-matched belting that is specially designed to ward off the punishing pull of bucket bolts—resist slippage wear—ban mildew. This better belting is available in three types, with or without covers.

For lifting heavy tonnages of moderately abrasive material, under wet or dry conditions . . . specify *Hewitt-Robins Ajax® Belting*.

For general bucket operation, lifting light, moderately abrasive materials where economy rules, specify *Hewitt-Robins Conservo® Belting*.

For meeting unusually severe requirements such as handling heavy, abrasive or wet, gritty materials, specify *Hewitt-Robins Monarch® Belting*.

Get complete facts and figures on how you can save with a Hewitt-Robins Belt & Bucket Elevator . . . write for Bulletin No. 151.

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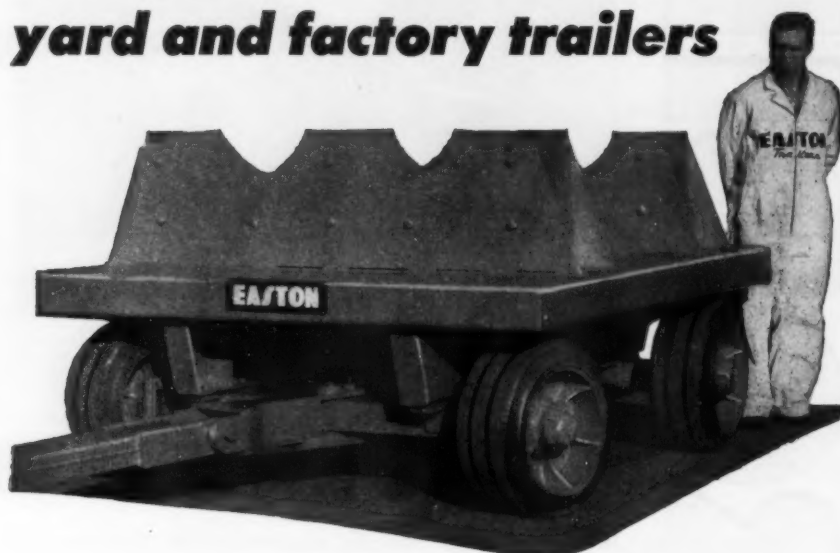
Hewitt Restfoam® Division

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- Cold Rolls
- Chilled Rolls
- Alloy Iron Rolls
- Moly Rolls
- Sand Rolls

**ROLLING MILL EQUIPMENT**  

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- Stretcher Levellers
- Guillotine Shears
- Sheet Mill Shears
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- Machine Work

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 Up To 80,000 Lbs.  

- Machinery Castings
- Lathe Beds
- Housings
- Pinion Housings
- Mill Housings
- Shoe Plate
- Lay-out Plates
- Surface Plates

## Hyde Park

**FOUNDRY & MACHINE CO.**  
 Hyde Park, Westmoreland County, Pa.  
**ROLLS • ROLLING MILL MACHINERY • GREY IRON CASTINGS**

A-1029

## Miscellaneous Prices

### BOLTS, NUTS, RIVETS, SCREWS

#### Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

#### Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List		Less	
	Keg.	K.	Keg.	K.
1/2 in. & smaller.	15	23 1/2	15	23 1/2
9/16 in. & 5/8 in.	12	25	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive .....	9	23	1	16 1/2
1 1/2 in. & larger.	7 1/2	22	1	16 1/2

#### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller.	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive .....	12	25	2	17 1/2
1 1/2 in. & larger.	8 1/2	23	2	17 1/2

#### Nuts, Cold Punched—Hexagon

1/2 in. & smaller.	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
Inclusive .....	19 1/2	31 1/2	13	25
1 1/2 in. & larger.	12	25	6 1/2	21

#### Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
1/2 in. & smaller.	35	45	28 1/2	39 1/2
9/16 in. & 5/8 in.	29 1/2	40 1/2	22	34
3/4 in. to 1 1/2 in.				
Inclusive .....	24	36	15	26 1/2
1 1/2 in. & larger.	13	26	8 1/2	23
Light				
7/16 in. & smaller	35	45		
1/2 in. thus 3/4 in.	38 1/2	39 1/2		
3/4 in. to 1 1/2 in.				
Inclusive .....	26	37		

#### Stove Bolts

	Pct Off List
Packaged, steel, plain finished.	45—10
Packaged, plate finish .....	31—10
Bulk, plain finish** .....	62*
*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.	
**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.	

#### Rivets

	Base per 100 lb
1/2 in. & larger .....	\$7.85

#### Cap and Set Screws

	Pct Off List
(In bulk)	
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 1/2 in. x 6 in., SAE 1020, bright .....	54
3/4 in. thru 1 in. up to & including 6 in. high C double heat treat .....	43
1/2 in. thru 3/4 in. x 6 in. & shorter	46
3/4 in. thru 1 in. up to & including 6 in. Milled studs .....	41
Flat head cap screws, listed sizes .....	38
Fillister head cap, listed sizes .....	34
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

#### Machine and Carriage Bolts

	Pct Off List
	Less Case C.
1/2 in. & smaller x 6 in. & shorter .....	15
9/16 in. & 5/8 in. x 6 in. & shorter .....	18 1/2
3/4 in. & larger x 6 in. & shorter .....	17 1/2
All diam. longer than 6 in. Lag, all diam. x 6 in. & shorter .....	23
Lag, all diam. longer than 6 in. .....	21
Plow bolts .....	34





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For fast, accurate, economical service on all your large or heavy-duty industrial gear requirements—call SIMONDS first. Nearly 60 years of specialized experience assures faithful reproduction of your most exacting specifications, on all types and sizes up to 145" diameter. Materials include cast or forged steel, gray iron, bronze, Meehanite, rawhide and bakelite. Centrally located, within easy shipping distance of heavy industrial areas, SIMONDS is your logical source for large industrial gears.

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**SIMONDS**  
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### REFRACTORIES

#### Fire Clay Brick

First quality, Ill., Ky., Md., Mo., Ohio, Pa.  
(except Salina, Pa., add \$5) .....\$94.60  
No. 1 Ohio ..... 88.00  
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00  
No. 2 Ohio ..... 79.20  
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50) ..... 13.75

#### Silica Brick

Mt. Union, Pa., Ensley, Ala. ....\$94.60  
Childs, Pa. .... 99.00  
Hays, Pa. .... 100.10  
Chicago District ..... 104.50  
Western Utah and Calif. .... 111.10  
Super Duty, Hays, Pa., Athens, Tex., Chicago ..... 111.10  
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) ..... 16.50  
Silica cement, net ton, bulk, Hays, Pa. .... 13.70  
Silica cement, net ton, bulk, Ensley, Ala. .... 17.60  
Silica cement, net ton, bulk, Chicago District ..... 17.60  
Silica cement, net ton, bulk, Utah and Calif. .... 24.70

#### Chrome Brick

Per Net Ton

Standard chemically bonded balt., Chester .....\$82.00

#### Magnesite Brick

Standard, Baltimore .....\$104.00  
Chemically bonded, Baltimore .... 93.00

#### Grain Magnesite

St. %-in. grains

Domestic, f.o.b. Baltimore  
in bulk fines removed .....\$62.70  
Domestic, f.o.b. Chewelah, Wash., in bulk ..... 36.30  
in sacks ..... 41.80

#### Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢...\$13.75

### LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower lake ports. 1952 prices not yet established. 1951 prices were:

Old range, bessemer ..... \$8.70  
Old range, nonbessemer ..... 8.55  
Mesabi, bessemer ..... 8.45  
Mesabi, nonbessemer ..... 8.30  
High phosphorus ..... 8.30  
After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

### METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags... 7.4¢ to 9.0¢  
Canadian sponge iron, del'd, In East ..... 10.00¢  
Domestic sponge iron, 98+% Fe, carload lots ..... 15.5¢ to 17.0¢  
Electrolytic iron, annealed, 99.5+% Fe ..... 42.5¢  
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe ..... 53.5¢  
Hydrogen reduced iron, minus 300 mesh, 98+% Fe. 63.0¢ to 80.0¢  
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe. 83.0¢ to \$1.48  
Aluminum ..... 31.5¢  
Brass, 10 ton lots ..... 30.00¢ to 33.25¢  
Copper, electrolytic. 10.75¢ plus metal value  
Copper, reduced .. 10.00¢ plus metal value  
Cadmium, 100-199 lb. 95¢ plus metal value  
Chromium, electrolytic, 99% min., and quantity, del'd. .... 33.50  
Lead ..... 7.5¢ to 12.0¢ plus metal value  
Manganese ..... 57.0¢  
Molybdenum, 99% ..... 22.75¢  
Nickel, unannealed ..... 88.0¢  
Nickel, annealed ..... 95.0¢  
Nickel, spherical, unannealed ..... 92.0¢  
Silicon ..... 38.5¢  
Solder powder. 7.0¢ to 9.0¢ plus met. value  
Stainless steel, 302 ..... 33.00¢  
Stainless steel, 316 ..... 31.10  
Tin ..... 14.00¢ plus metal value  
Tungsten, 99% (65 mesh)... 46.00  
Zinc, 10 ton lots ..... 23.0¢ to 39.5¢

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- .032" to .134" wall
- SAE 1010 to 1025

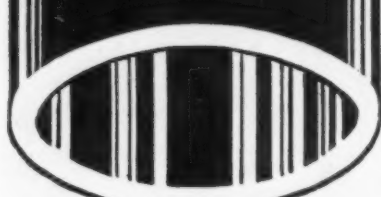
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PHILADELPHIA 23, PA.

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## Ferroalloy Prices

### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si			22.60

### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	\$1.14
0.50% max. C	1.10
9 to 11% C	1.08

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, dump delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe	19.00
Carloads	22.10
Ton lots	23.60

### Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si	20.00
Carloads	22.30
Ton lots	23.30

### CMSZ

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, 1/2 in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. SI 48 to 52%, TI 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

### Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O. . . . . \$185

F.o.b. Johnstown, Pa. . . . . \$187

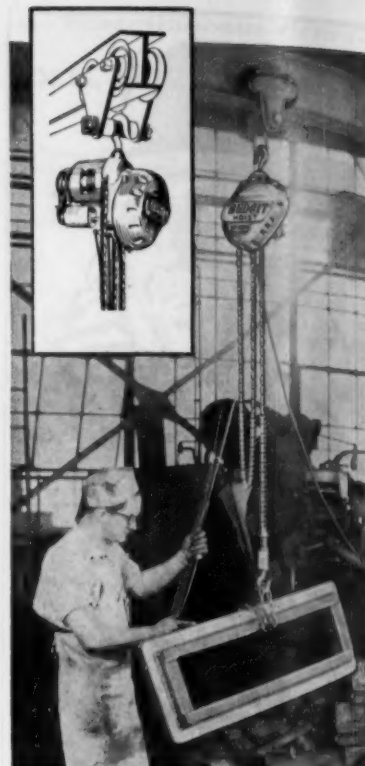
F.o.b. Sheridan, Pa. . . . . \$185

F.o.b. Etna, Clairton, Pa. . . . . \$188

\$2.00 for each 1% above 82% Mn, penalty, \$2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.95
Ton lots	12.55



## LIFTS FAST...

## SAVES FAST

Greater production results when load handling keeps pace with the capacity of machines to produce. So — boost your defense and civilian output—lower your costs—with the 'Budgit' Electric Hoist. The smallest 'Budgit' lifts 250 lbs. a foot in less than two seconds. No more strained ligaments or other injuries due to manual lifting. Hoisting is safe, easy and fast because electricity does all the heavy work.

The 'Budgit' is miserly in using electricity. It's a complete load lifting unit in itself — no accessories to buy, no installation costs. Hang up, plug in, and it's ready for work. Capacities: 250 to 4,000 lbs. A.C. and D.C. models. Priced from \$119. Write for Bulletin No. 390 for more details.



**'BUDGIT' CONDUCTOR CORD TROLLEYS**—keep flexible conductor cord up out of way while carrying electricity to mono-rail hoists. Roll smoothly around curves, past switches.



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ELECTRIC HOISTS**

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## Ferroalloys

Continued

### Spiegeleisen

Contract prices gross ton; lump, f.o.b.  
16-19% Mn 19-21% Mn  
3% max. Si 3% max. Si  
Palmerton, Pa. \$74.00 \$75.00  
Fgh. or Chicago 74.00 75.00

### Manganese Metal

Contract basis, 2 in. x down, cents per  
pound of metal, delivered.  
96% min. Mn, 0.2% max. C, 1% max.  
Si, 2.5% max. Fe.  
Carload, packed 34.75  
Ton lots 36.25

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed  
east of Mississippi, cents per pound.  
Carloads 28  
Ton lots 30  
Less ton lots 32

### Low-Carbon Ferromanganese

Contract price, cents per pound Mn con-  
tained, lump size, del'd Mn 85-90%.  
Carloads Ton Less  
0.7% max. C, 0.06%  
P, 90% Mn 26.25 28.10 29.30  
0.07% max. C 25.75 27.60 28.80  
0.15% max. C 25.25 27.10 28.30  
0.30% max. C 24.75 26.60 27.80  
0.50% max. C 24.25 26.10 27.30  
0.75% max. C 21.25 23.10 24.30  
7.00% max. Si, 40% Si, 40% Fe,  
contract basis, f.o.b. Suspension  
Bridge, N. Y.  
Carloads 9.90  
Ton lots 11.30  
Calcium molybdate, 46.3-46.6%  
f.o.b. Langeloth, Pa., per pound  
contained Mo. \$1.15

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract  
price, carloads, lump, bulk, delivered, per  
lb of contained Mn 19.15¢

### Silicomanganese

Contract basis, lump size, cents per  
pound of metal, delivered, 65-68% Mn,  
18-20% Si, 1.5% max. C. For 2% max. C,  
deduct 0.3¢.  
Carload bulk 9.90  
Ton lots 11.55  
Briquet, contract basis carlots, bulk  
delivered, per lb of briquet 11.15  
Ton lots 12.75

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk,  
Iowa, or Wenatchee, Wash., \$92.50 gross  
ton, freight allowed to normal trade area.  
Si 15.01 to 15.50 pct, f.o.b. Niagara Falls,  
N. Y., \$90.00. Add \$1.00 per ton for each  
additional 0.50% Si up to and including  
15%. Add \$1.00 for each 0.50% Mn over  
1%.

### Silicon Metal

Contract price, cents per pound con-  
tained Si, lump size, delivered, for ton lots  
packed.  
96% Si, 2% Fe 21.70  
97% Si, 1% Fe 22.10

### Silicon Briquets

Contract price, cents per pound of  
briquet bulk, delivered, 40% Si, 2 lb Si  
briquets.  
Carloads, bulk 6.95  
Ton lots 8.55

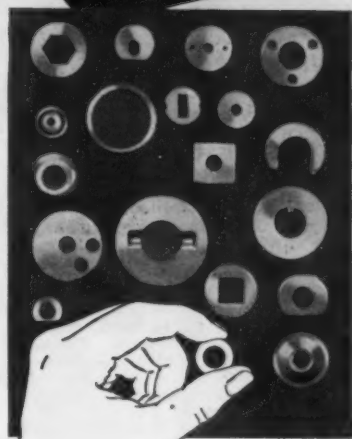
### Electric Ferrosilicon

Contract price, cents per pound con-  
tained Si, lump, bulk, carloads, delivered.  
25% Si 20.00 75% Si 14.30  
50% Si 12.40 85% Si 15.55  
90.95% Si 17.50

### Calcium Metal

Eastern zone contract prices, cents per  
pound of metal, delivered.  
Cast Turnings Distilled  
Ton lots \$2.05 \$2.95 \$3.75  
Less ton lots 2.40 3.30 4.55

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..Specials



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quirements are our  
special concern.

## STEEL WASHERS FOR EVERY NEED

A DEPENDABLE SUPPLIER  
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shapes and forms, 9/32" to 8" O.D.,  
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to answer your needs. A VARIETY  
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gin to get acquainted by using Apex Bits in your  
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Serrated — plus Inserted-Blade Milling Cut-  
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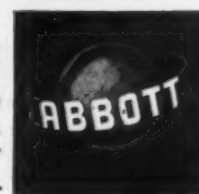
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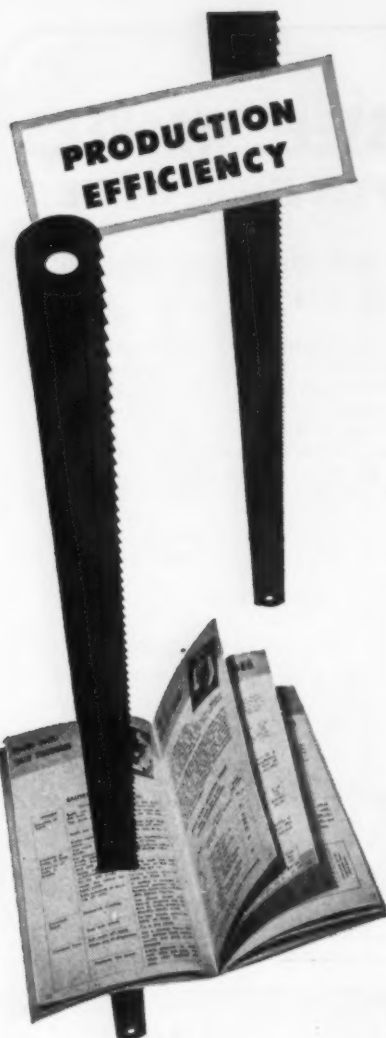
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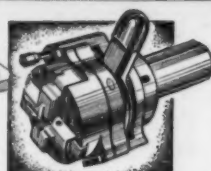
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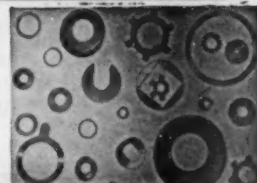
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# The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

**Not Affected**—Used machine tool business activity has been unaffected by the new pricing schedule which went into effect June 2nd. Some dealers had hoped for a momentary quickening of the sales tempo but most report business at the same levels.

Little good used equipment has appeared on the market as a result of the price changes. Dealers claim shortage of late model used machinery is not a matter of pricing but stems from manufacturers' desire to hang on to the machine tools they have since they can't get new replacements.

**Some Squirm**—The 30-day guarantee clause contained in the amendment to Ceiling Price Reg. 80 may cause a few dealers to squirm. Testing under power is now part of the guarantee required on reconditioned machinery. Dealers without test equipment will either be unable to sell their machines as reconditioned or else be forced to have tests made by another firm. This added cost is not one that can be passed on to the buyer.

**Price Bureau**—With the promised price book still "being compiled" by the Office of Price Stabilization, dealers in the Chicago area have set up a fairly efficient price information exchange. Individual firms are specializing in prices on certain groups of tools, and this method is easing the pricing headache.

In New York dealers are still getting price information wherever they can. Some report having received bills ranging up to \$25 from manufacturers for price information. Payment is not usually forced, but if the bill is not paid further price aid cannot be obtained.

Latest OPS estimate on the release date of the much-needed price book is that it will not be

available for at least 5 weeks. Difficulty in obtaining prices from manufacturers is reported as the main bottleneck.

**New Amendment**—Another amendment to CPR 80 is expected in a month or so. OPS agrees with the industry that metalworking machines do not depreciate as rapidly as machine tools. As a result, it is expected that the new revision will establish a different price basis for metalworking units. They are now lumped in the same price schedule as machine tools.

The proposed amendment may also establish minimum prices for low cost machine tools. These prices will be somewhat higher than ceilings obtained under the current percentage basis.

**Foreign Sales**—Foreign buyers are reported to be looking over equipment in the Chicago market, but few sales have been made. On the other hand, foreign machine tools are not moving rapidly. Even the sellers do not regard the imports as much more than emergency fill-ins and sales have not been up to early expectations. Buyers are wary about the quality of the imports and concerned about the problem of replacement parts and servicing.

Replacement parts for American-built items are still a problem. Regular buyers of replacement parts are getting delivery in 1 to 3 weeks, but occasional buyers have to wait longer. In one exceptional case the lapse ran into several months.

**Chapter Added**—A Board meeting of the Machinery Dealers National Assn. will be held in Pittsburgh, June 19th, in conjunction with the addition of a new chapter to the association. The price book problem may be discussed at that time with the feasibility of having the MDNA publish a price book of its own a possible consideration.